CLINICIAN'S GUIDE TO

Assessing and Counseling Older Drivers

4th Edition

AGS Geriatrics Healthcare Professionals

Leading Change. Improving Care for Older Adults.

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INTRODUCTION – 4TH EDITION

Translating research findings and public health initiatives into practical everyday applications for patient-centered care is a constant challenge for clinicians engaged in the care of older adults. Nearly everyone, regardless of profession or specialty, will be working with older adults as either patients or caregivers in the next 20 years as the baby boomer generation enters their retirement years living longer and being more active than any previous generation. As the most mobile generation to date, these older adults are already putting in more miles behind the wheel and expect to remain mobile in the community as they age, ideally with a driving "life expectancy" that keeps up with their lifespan.

In order to support older adults' access to health care, social interaction, and nutrition through independent mobility, interprofessional clinical team members need office-based tools to screen for medical and functional issues which may affect driving ability, assess the risk of driving impairment, intervene to optimize treatment and functional ability, refer appropriately for specialized care and driving rehabilitation, and provide counseling about planning for transitioning from driving if necessary.

The American Geriatrics Society (AGS) extended a cooperative agreement with the U.S. Department of Transportation's National Highway Traffic Safety Administration (NHTSA) to update and expand the *Clinician's Guide to Assessing and Counseling Older Drivers, 3rd Edition* to this current 4th edition.

The main goal of the *Clinician's Guide* remains helping healthcare practitioners prevent motor vehicle crashes and injury to older adults. Motor vehicle injuries persist as 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 had partial success in reducing crash rates for all drivers, the fatality rate for drivers over age 65 has consistently remained high. Increased comorbidities and frailty associated with aging make it far more difficult to survive a crash, and the expected massive increase in the number of older adults on the road is certain to lead to increased injuries and deaths unless we can successfully intervene to prevent harm.

Healthcare practitioners caring for older adults are in a leading position to address and correct this public health concern at the individual patient and caregiver level. By providing effective health care, clinicians

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—clinicians can better identify older drivers at risk for crashes, help enhance their driving safety, and ease the transition to driving retirement if and when it becomes necessary.

We wish to thank our program officers at NHTSA for their continued support of the *Clinician's Guide* project over the years in addressing the important area of older driver mobility, especially the pioneering work of Essie Wagner.

Our current interprofessional Editorial Board has taken great care to preserve the intent of providing the best evidence-based recommendations from the current literature, while recognizing the different environments of care in which members of the clinical team encounter older adults. We hope that you will find the *Clinician's Guide* useful and welcome your feedback as we move forward in engaging our older adults and caregivers in maintaining safe mobility for life.

This publication resulted from a cooperative agreement between the U.S. Department of Transportation, National Highway Traffic Safety Administration (NHTSA), and the American Geriatrics Society (AGS). The opinions, findings, and conclusions expressed in this publication are those of the author(s) and not necessarily those of the U.S. Department of Transportation or NHTSA. The United States Government assumes no liability for its contents or use thereof. If trade names, manufacturers' name, or specific products are mentioned, it is because they are considered essential to the object of the publication and should not be construed as an endorsement. The United States Government does not endorse products or manufacturers.

CHAPTER 1 THE OLDER ADULT DRIVER: AN OVERVIEW

KEY POINTS

- The number of older adult drivers is growing rapidly, and they are driving longer distances.
- Motor vehicle crashes are far more harmful for older adults than for all other age groups.
- The risk of crashes for older drivers is in part related to physical, visual, and/or mental changes associated with aging, medications and/or disease.
- Many older adult drivers self-regulate their driving behavior.
- Driving cessation is inevitable for many and is often associated with negative outcomes.
- Clinical team members can help older adult drivers maintain safe driving skills using the Plan for Older Driver Safety (PODS) algorithm and may also influence older adult drivers' decisions to modify or stop driving if the older adult develops functional disability that affects driving skills.

Mrs. Alvarez, a 72-year-old woman, *mentions during a routine appointment that she would like an earlier time slot so she can avoid heavy traffic and driving in the dark. She denies previous crashes or injuries but seems anxious about her planned two-day road trip to attend her grandson's graduation. She has arthritis, type 2 diabetes mellitus, hypertension, peripheral neuropathy, and insomnia. Mrs. Alvarez admits to feeling less confident when driving and has reduced her social and shopping activities because of her worries.*
How do you address these driving concerns?

Mr. Phillips, an 82-year-old man *with a history of hypertension, congestive heart failure, atrial fibrillation, macular degeneration, and osteoarthritis, comes to your office for a follow-up visit. You notice that Mr. Phillips has a great deal of trouble walking, uses a cane, and has difficulty reading his paperwork, even with his glasses. During your conversation, you ask him if he still drives, and he states that he takes short trips to run errands, get to appointments, and meet weekly with his bridge club.*
What are your next steps in addressing his fitness to drive?

Older adult drivers like Mrs. Alvarez and Mr. Phillips are encountered by clinical team members in every setting. In 2017, some 50.9 million people --- over 16 percent of the total U.S. resident population --- were 65 and older. 1 This population of older adults is expected to nearly double by 2060.2 Approximately 84% of Americans 65 and older continue to drive, with this cohort of 43.6 million older adult drivers comprising 19% of all licensed drivers in 20173. It is expected that one of every four licensed drivers will be an older adult by 2050, in addition to driving more miles than older drivers do today.[4]

Common age-related changes that impact functional abilities in addition to medical conditions can make driving difficult, potentially reducing the older adult's independence, social contact, and access to nutrition, health care, and other services. There are three clinical levels of care regarding driving ability in older adults (Table 1.1).

Assessing and managing potential driving disability can be challenging and time consuming, because many clinicians often consider it a personal rather than a clinical issue. Legal and ethical questions may also deter clinical team members from

addressing driving ability in older adults. Yet as medical conditions arise and progress with advancing age, older adult drivers and their caregivers will increasingly turn to clinical team members for guidance on safe driving. The challenge is in balancing the safety of older adults against their transportation needs and the safety of society.

Level of Care	Description
Primary prevention	Assesses the older adult driver and intervenes to prevent the loss of driving ability
Secondary prevention	Addresses issues that have already caused the loss of driving skills and attempts to restore those skills through treatment and rehabilitation
Tertiary prevention	Identifies when irreversible loss of driving skills has occurred and includes recommending alternatives to avoid harm to the older adult and others when driving is no longer an option

Table 1.1 - Clinical Levels of Care for Prevention of Driving Disability

This guide is intended to help answer the following questions and, if necessary, help clinical team members counsel patients about transportation planning, including driving cessation.

- At what level of severity do medical conditions impair safe driving?
- What can be done to help older adults prolong their driving life expectancy (time behind the wheel)?
- How can transportation planning ensure safe mobility and continued participation in valued activities (e.g., hair dresser, breakfast club, place of worship)?

Note: The information in this guide is provided to assist clinical team members in evaluating the ability of older adults to safely operate motor vehicles as part of their everyday, personal activities. Evaluating the ability of older adults to operate commercial motor vehicles (CMV) or to function as professional drivers involves more stringent criteria and is beyond the scope of this guide.

CLINICAL TEAM MEMBERS AND THEIR ROLES

All clinical team members can help identify and counsel older adults who may be at risk of driving impairment. Clinical team members may have opportunities to interact with older adults in varied health care settings for screening and perhaps assessment or referral to another team member or specialist for further evaluation as needed. Although many health care professionals do not work directly with one another in the same setting, "virtual" teams often come together during the course of care for an individual older adult. Some of the skills and roles of potential clinical team members are described below to help identify opportunities for interprofessional collaboration and to maximize the available support for an older adult. The professional roles defined below are not mutually exclusive; in practice, responsibilities may be shared across disciplines.

Physician/Nurse Practitioner/Physician Assistant

The patient's primary care provider, who may be a physician, nurse practitioner, or physician assistant, performs the medical evaluation to determine if the older adult has any medical conditions that may affect his or her ability to drive safely. This medical assessment helps to direct further supportive interventions, referrals, and potential medical treatment. Older adults are often more likely to consider changes in their driving practices if their primary care providers discuss the importance of safety interventions.[5]

Nurse

Nurses contribute to the medical assessment by monitoring basic vital signs and evaluating functional abilities, disease risk factors, medication adherence and adverse effects, personal health behaviors such as alcohol use, and health literacy. This information can be used to facilitate changes in the care plan and follow-through by the older adult and/or his or her caregivers. Home-health nurses and direct care personal assistants often have unique opportunities to closely observe, counsel, and support older adults at home in their day-to-day activities. A nurse may also serve as a case manager, health counselor, or a resource for the older adult and caregivers, and liaison with other clinical team members if older adults or their caregivers have health-related questions or concerns.

Pharmacist

Pharmacists can perform a thorough medication history, including use of over-the-counter drugs; assess adherence to medication regimens; assess the potential for medications, adverse effects, or drug interactions to affect driving ability; and counsel older adults on these issues. Pharmacists may also make recommendations to the clinical team for optimal pharmacologic management of medical conditions that may impair driving, and for dosage adjustment, timing, or therapeutic substitution of medications that may have driving-impairing effects. Some pharmacists also directly manage the treatment of various medical conditions that may contribute to driving impairment.

Occupational Therapist/Driving Rehabilitation Specialist

Occupational therapists assess the older adult's functional abilities and the visual, cognitive, perceptual, and physical capacities for those abilities. Occupational therapists provide interventions for identified impairments to support mobility in the environment, including driving, and may recommend strategies, therapies, and assistive devices for rehabilitation. Occupational therapists often seek additional training to become driving rehabilitation specialists, who can perform expert special assessments and therapeutic interventions specifically regarding fitness to drive, including on-road testing.

Social Worker

Social workers assess the older adult's well-being and transportation needs, evaluate the level of caregiver support available, and help access affordable training and transportation options. Social workers may also counsel older adults and their caregivers and help identify resources to overcome barriers to changing driving patterns or eventual driving retirement (such as financial support or peer support groups).

Psychologist

Clinical psychologists often participate in advanced evaluation of the cognitive abilities needed for driving. In these assessments, clinical psychologists and neuropsychologists evaluate multiple cognitive domains, including attention, memory, processing speed, executive skill, and judgement. They often also evaluate the relative contributions from mental health conditions that could influence a patient's ability to drive (e.g., substance use, anxiety/depression, and pain). Psychologists may provide interventions to both patients and their caregivers that include adapting to changes in lifestyle and transportation. Research psychologists study how the environment and vehicle and human factors affect driving ability. A handbook from the American Bar Association and the American Psychological Association more thoroughly discusses a psychologist's role in assessing the driving capacity of older adults with diminished capacity.[6]

Tools Included in the Clinician's Guide

Many tools for evaluating older adult drivers, mobility counseling, and transportation planning have been developed in the United States and other countries. However, there are still relatively few well-studied strategies that reliably predict driving outcomes for each individual, in part because of the complexity of the issues involved in driving and the heterogeneity of the older adult population. The new fourth edition of the Clinicians' Guide to Assessing and Counseling Older Drivers continues the collaboration between the American Geriatrics Society and the National Highway Traffic Safety Administration (NHTSA) to offer updated recommendations, tools, and resources for the clinical team involved in the care of older adults for use in multiple care settings as follows:

- A clinically based assessment of medical fitness to drive, presented in the algorithm *Plan for Older Drivers' Safety* (PODS) (see below).
- A toolbox of practical, office-based functional assessment tests for driving-related skills, the Clinical Assessment of Driving Related Skills (CADReS) (see Chapter 3). The clinical team can choose among these tests, depending on the outcomes of screening tests and the individual older adult's abilities (see Chapter 2).
- Information to help navigate the legal and ethical issues regarding patient driving safety, including information on patient reporting, with a state-by-state list of licensing agency contact information, and additional resources for locating license renewal criteria and reporting laws and procedures (see Chapters 7 and 8).
- A reference listing of medical conditions and medications that may affect driving, with specific recommendations for each (see Chapter 9).
- Recommended Current Procedural Terminology (CPT) codes for assessment and counseling procedures (see Appendix A).
- Patient education materials for older adults and their caregivers that include a self-screening tool for driving safety, safe driving tips, driving alternatives, and a resource sheet for concerned caregivers (see Appendix B). Links for accessing recommended resources from reputable organizations are also provided.
- Sample approaches in subsequent chapters for conversations about driving assessment, rehabilitation, restriction, and cessation.
- Online access to the guide through the American Geriatrics Society's portal of resources (www.GeriatricsCareOnline.org) and via NHTSA's Older Drivers website (https://www.nhtsa.gov/road-safety/older-drivers).

KEY FACTS ABOUT OLDER ADULT DRIVERS

The number of older adult drivers is growing rapidly, and they are driving longer distances.

Life expectancy remains high[7] and the older population is rapidly increasing. By the year 2060, the population of adults 65 and older will nearly double to approximately 95 million, making up at least 20% of the total U.S. population.[8] In many states, including Florida and California, the population of those older than 65 may reach 20% in this decade. The fastest growing segment of the population is the 80-and-older group, which is anticipated to increase to 30 million over the next 30 years. Similar trends are occurring globally, with the expected worldwide population of people aged 60 years or older expected to reach 21% by 2050, when the number of older adults is projected to exceed the number of children for the first time.[9] Older adults are projected to outnumber children in the United States by the year 2035.[2]

In addition, the United States has become a highly mobile society, and older adults drive for volunteer

activities and gainful employment, social and recreational needs, and cross-country travel. Recent studies suggest that older adults are driving more frequently, and transportation surveys reveal an increasing number of miles driven per year for each successive aging cohort.[4]

Motor vehicle crashes are far more harmful for older adults than other age groups.

In 2017, there were 6,784 people 65 and older who were killed in traffic-related crashes (up from 5,560 in 2012).[1] In 2017, 289,000 older adults were injured in motor vehicle crashes.[10] Most traffic fatalities in crashes involving older drivers occurred during the daytime (73%) on weekdays (69%), and involved other vehicles (67%) at intersections.[11] Unintentional injuries are the seventh leading cause of death among older adults, and motor vehicle crashes are the second most common cause of injury after falls.[12,13] Beginning at age 75, older adult drivers have a higher fatality rate per mile driven than any other age group except drivers younger than 29.[14] Older adult pedestrians are also more likely to be fatally injured at crosswalks than younger adults.[12] Although the fatality rates have slowly declined, the continuing increase in the number of older adults still results in a higher number of deaths in this age group.

The rate of poor outcomes after a crash is disproportionately higher in older adult drivers, due in part to chest and head injuries.[15] Relative to a driver 35-54 years old, older adults 70 and older are 3.2 times more likely to die in a crash and about 1.5 times more likely to sustain a serious injury.[16] There may be several reasons for this.

- Increased fragility in some older adult drivers. For example, older adults have an increased incidence of osteoporosis, which can lead to fractures, and/or atherosclerosis of the aorta, which can predispose to aortic rupture with chest trauma from an airbag or steering wheel. Fragility begins to increase at ages 60-64 and increases steadily with advancing age.[17]
- Ownership and use of older cars that are less crashworthy and lack some of the safety features added to newer vehicles specifically designed to enhance occupant protection and mitigate the risks of frailty with a gradual decrease in deaths per miles driven. Frontal air bags, required in all new passenger vehicles since the 1999 model year, help mitigate the severity of chest injuries; side air bags became added pieces of standard equipment by nearly all manufacturers, but they are not mandated. Side air bags have been found to protect the head and reduce a driver's risk of death in driver-side crashes by 37 percent and an SUV driver's risk by 52 percent.[18] Vehicle protection (referred to by NHTSA as crash mitigation factors) for older adults may improve as future cohorts of aging drivers purchase newer vehicles with better design features.[19]
- Overrepresentation of specific types of crashes such as left-hand turns that increase vulnerability to injury.

However, enhancements in roadway design and vehicle safety features that may be helping mitigate the risks of frailty with a gradual decrease in deaths per mile driven in the past decade. Proven safety countermeasures engineered into roadway design can decrease crash impact for all road users, including older people.[19] These countermeasures include enhanced signals and signs, slower design speeds, minimized conflict points, and improved walkways for pedestrians.

- Vehicle crash avoidance technology that is likely to improve older driver safety. For example, electronic stability control, which helps drivers maintain control of their vehicle on curves and slippery roads, became standard on all 2012

or later vehicles. NHTSA estimates installation of electronic stability control has reduced fatal single-vehicle crashes by 38% and for SUVs (in preventing roll overs) by 56%, without even accounting for those in multicar crashes.[20] For crash avoidance technologies, the reduction in crashes was significant when comparing rates of police-reported crashes for vehicles with and without the technologies, for forward collision warning (27%), forward collision warning plus autobrake (56%), lane departure warning (21%), blind spot detection (23%), rear automatic braking (62%), rearview cameras (17%), and rear cross-traffic alert (22%).[21]

The risk of crashes for older drivers is in part related to physical, visual, and/or mental changes associated with aging and/or disease.

Compared with crashes involving younger drivers, which are due to inexperience or risky behaviors,[23] crashes among older adult drivers tend to be related to critical errors of inattention or slowed speed of visual processing.[24] Crashes involving older adult drivers are often multiple-vehicle, lower-speed events that occur at intersections and involve left-hand turns.[25] Causes include inadequate surveillance and difficulties judging the speed of other vehicles and the space available, such as an older driver's failure to heed signs and grant the right-of-way.[24] Lane departures off the road or into an adjacent lane are more frequently due to medical events such as blackouts, drowsiness, or seizures.[24]

These driving behaviors indicate that visual, cognitive, and/or motor factors may affect driving ability in older adults. Critical driver errors are significantly more prevalent among older female drivers than middle-aged female drivers but did not differ significantly by age for male drivers. However, critical errors due to medical events and illegal maneuvers occurred significantly more often among older male drivers than those in middle age.[24] It is believed that further improvements in traffic safety using roadway countermeasures will likely result in improving driving performance or modifying driving behavior.[26] The identification and management of medical conditions, functional impairments, and potentially driving-impairing medications may maintain or improve driving abilities and road safety.

Many older adult drivers self-regulate their driving behavior.

As drivers age, they may begin to feel limited by slower reaction times, chronic health problems, and effects of medications. Although transportation surveys over the years document that the current cohort of older adult drivers is driving farther, in later life many reduce their mileage or stop driving altogether. According to the 2017 National Household Travel Survey, daily travel patterns for drivers 65 and older show more driving time and more trips taken in 2017 than in 2009, with the increase coming mostly among those ages 75 and older.[27] Older drivers are more likely to wear seat belts and are less likely to drive at night, speed, tailgate, consume alcohol before driving, or engage in other risky behaviors.[28] Data also suggest that older women are more likely to self-regulate than men.[29]

Despite all these self-regulating measures, motor vehicle crash and fatality rates per mile driven begin to increase significantly at age 70.[14] 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 may occur so insidiously (e.g., peripheral vision loss) that the older driver is not aware of it until a crash occurs. In fact, a recent study indicated that some older adults do not restrict their driving despite having significant visual deficits.[30] Reliance on driving as the only available means of transportation can result in an unfortunate

choice between poor options. In the case of dementia, older adult 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 5 years, about 40% of the participants knew someone older than 65 who had problems with driving but was still behind the wheel.[31] Clearly, some older drivers require outside assessment and interventions when it comes to driving safety. This is well recognized by older adults themselves, with more than 7 in 10 of 1,700 adults 65 and older surveyed supporting both mandating in-person license renewals and medical screenings for drivers older than 75.[4]

Driving cessation is inevitable for many and often associated with negative outcomes.

Driving is essential for performing necessary chores and maintaining social connectedness, with the latter having strong correlates with mental and physical health.[32] 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 is the only available means of transportation. Just as the driver's license is a symbol of independence for adolescents, the ability to continue driving means independent transportation and access to resources for day-to-day life for older adults and is highly valued.[33,34]

In a survey of 2,422 adults 50 and older, 86% of participants reported that driving was their usual mode of transportation. Within this group, driving was the usual method of transportation for 85% of participants 75-79 years old, for 78% of participants 80-84 years old, and for 60% of participants 85 and older.[26] This high utilization continued to be true in the 2017 National Household Travel Survey, with older drivers travelling multiple times per week.[27] These data also indicate that the probability of losing the ability to drive increases with advanced age. It is estimated that the average man will have 6 years without the functional ability to drive a car, and the average woman will have 10 years.[35] However, many older adults may overestimate their driving life expectancy, with more than half of drivers surveyed by the Centers for Disease Control and Prevention (CDC) reporting they would stop driving sometime in their 90s, and 1 in 10 reporting they would never stop driving.[36] Given this outlook, it is likely that older adult drivers and caregivers will be unprepared to address issues related to driving cessation when that time comes. Clinicians have an opportunity to shift the message from the negativity surrounding driving cessation by facilitating a more proactive message through initiation of transportation planning early in the process, when the discussion can include more options so the individual has more control and choice in the process. This may assist in avoiding decisions of cessation becoming an urgent matter or crisis. Clinicians can start the conversation about transportation planning early on to promote control and choice by older adults and minimize urgent crisis situations when driving cessation occurs.

Studies of driving cessation have noted increased social isolation, decreased out-of-home activities,[36] and increased depressive symptoms.[37,38] These outcomes have been well documented and represent some of the negative consequences of driving cessation. It is important for the clinical team to be supportive in the face of what may be a devastating loss of independence, and to use available resources and professionals who can assist with transportation to allow older adults to maintain independence. These issues will be discussed in subsequent chapters.

Clinical team members can influence older adult drivers' decisions to modify or stop driving, as well as help older adult drivers maintain safe driving skills.

Although older adult drivers believe they should be the ones to make the final decision about driving,[39] they also agree that their primary care providers should advise them. In a series of focus groups conducted with older adults who had stopped driving, all agreed that clinicians should talk to older adults about driving, if a need exists. Although family advice had limited influence on the participants, most agreed if their physicians advised them to stop driving and their family concurred, they would certainly do so.[31,40] This is consistent with a focus group study with caregivers of drivers with dementia, who stated that physicians should be involved in this important decision-making process.[5] Communication about driving is an emotionally charged and context-sensitive topic for older drivers that best occurs with trusted providers, over time and in a way that allows the older adult to maintain agency.[41] The clinical team together can provide the most complete information and advice for older adults and caregivers when arriving at decisions regarding driving.

In addition to helping determine ability to drive safely, the members of the clinical team can assist at-risk older adult drivers to maintain safe mobility in multiple ways, including recommending effective treatment and preventive health care measures, playing a role in determining the ability of older adults to drive safely, counseling older adults and caregivers, and helping access alternative transportation resources.

In many cases, clinical team members can help older adult drivers to stay on the road longer by identifying and managing medical conditions, such as cataracts and arthritis, or by discontinuing driving-impairing medications. Driving abilities share many attributes necessary for successful ambulation, such as adequate visual, cognitive, and motor function. In fact, a history of falls has been associated with a significantly increased risk of motor vehicle crash.[42,43] Clinical team members can reduce future risk of falls and fractures by advising on fall prevention and addressing certain extrinsic (environmental) and intrinsic factors.[44] Tools such as the CDC's *My Mobility Plan* provides general guidance for older adults seeking to maintain both individual and community mobility.[45]

There is an assumption that clinical team members can and do make a difference by evaluating older adults for their fitness to drive. However, there is a crucial need for systematic study of this hypothesis.[46] Research and clinical reviews on the assessment of older adult drivers have focused on screening methods to identify unsafe drivers and restrict older drivers. Efforts to evaluate the efficacy of driving rehabilitation strategies have been recently reviewed and updated by the occupational therapy community,[47] but other clinical interventions have not been similarly studied in the United States. Clinical team members are in positions to identify older adults at risk of unsafe driving or self-imposed driving cessation because of functional impairments, and to help address and manage these issues so that older adults can continue to drive safely for as long as possible.

The final determination of an individual's ability to drive lies with the state licensing authority; however, clinical team members can assist with this determination. Driver licensing regulations and reporting laws vary greatly by state, and some state laws are vague and open to interpretation. Therefore, it is important for clinical team members to be aware of their state reporting laws and their responsibilities for reporting unsafe drivers

to the local driver licensing authority. For more information on state laws, see Chapter 8. For more information on the role of the state licensing agency in promoting safety of older drivers, see Chapter 10.

Thus, clinical team members can play a more active role in preventing motor vehicle crashes by assessing and counseling older adult drivers regarding their fitness to drive, recommending safe driving practices, referring older adults to driver rehabilitation specialists, advising or recommending driving restrictions, and referring older adults to state licensing authorities when appropriate. To achieve these ends, clinical team members can follow the general principles below and recommendations in the algorithm *Plan for Older Drivers' Safety* (PODS) (see below in this chapter):

■ **Screen** for red flags such as medical conditions, potentially driver-impairing medications, and recent adverse driving events or behaviors (see Chapter 2 and the Appendix B handouts Testing Driver Safety, Drivers 65 Plus: Check Your Performance Self-Rating Tool, and How to Understand and Influence the Older Driver).

■ **Assess** driving-related functional skills in those older adults at increased risk of unsafe driving. For the toolbox of functional assessments, see the Clinical Assessment of Driving Related Skills (CADReS) in Chapter 3.

■ **Evaluate and treat** at-risk older drivers for medical conditions and other causes that may be impairing functional skills related to driving and intervene to:

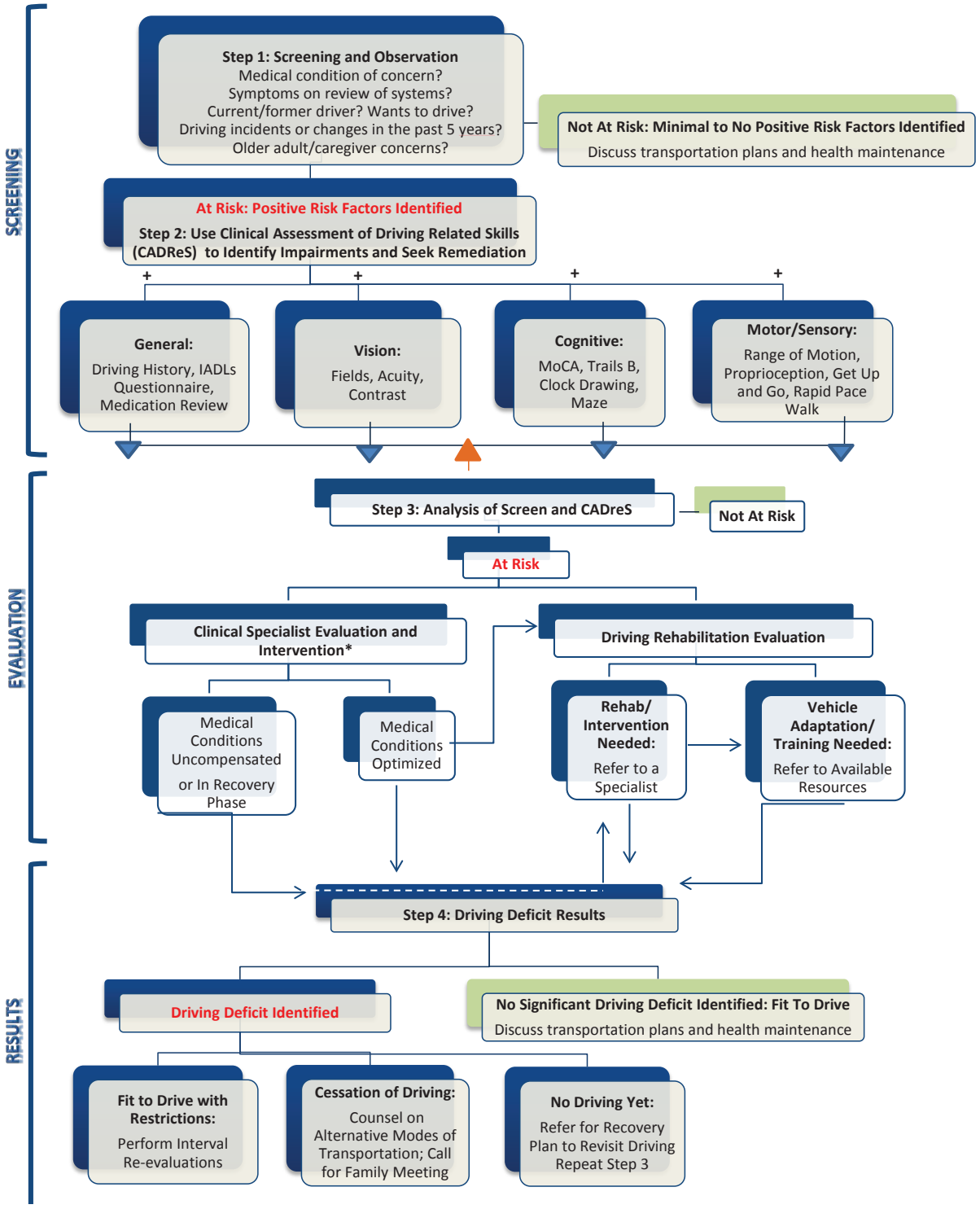
- **Optimize** the treatment of underlying medical and functional contributors to driving impairment within the clinical team member's scope of practice or by referral to another clinical team member or medical subspecialist (see Chapter 4).
- **Refer** older adult drivers with persistent deficits despite optimal medical treatment, when appropriate, to a driving rehabilitation specialist for further driving evaluation and/or training in the use of adaptive equipment (see Chapter 5).

■ At all times, discuss the maintenance of driving ability, safe driving behaviors, and driving restrictions. When appropriate, **counsel** older adults and their caregivers on the importance of transportation planning and potential driving cessation (see Chapter 6).

■ **Perform** interval reevaluations and **follow-up** with older adults who should adjust their driving to determine if they have made changes, and monitor those who stop driving for signs of depression and social isolation. Older drivers' abilities are not static and may improve or decline as their conditions change. For example, an older adult may benefit from physical therapy after a stroke or surgery and regain functional abilities permitting a return to driving. Older adults may therefore reenter the PODS algorithm for reevaluation and/or treatment at any step along the way.

Although primary care providers may have access to the most resources to perform the PODS, other clinicians also have a responsibility to discuss driving with older adults. In addition, specialists in the fields of cardiology, ophthalmology, neurology, psychiatry, psychology, rehabilitation, orthopedics, emergency/urgent care, trauma, and others all encounter older adults with conditions that may have an impact on driving skills. When advising older adults, clinical team members may wish to consult the reference list of medical conditions in Chapter 9.

Plan for Older Drivers' Safety (PODS)



IADLs	Instrumental Activities of Daily Living
MoCA	Montreal Cognitive Assessment
▲	Pathway step may be repeated if progressive assessment necessary
*	Clinical specialists may include medicine, nursing, rehabilitation, pharmacy and social work, or others, depending on the clinical setting
----	Time Lapse

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CHAPTER 2 IS THE OLDER ADULT AT INCREASED RISK OF UNSAFE DRIVING?

KEY POINTS

- When taking the older adult's history and reviewing the medical record, be alert to "red flags," which include any medical conditions, health symptoms (e.g., pain, fatigue), visual, cognitive, or motor changes, medications, functional decline, or symptoms or signs that can affect driving skills and safety.
- Do not make assumptions about whether an older adult is driving. Always be sure to ask about this key instrumental activity of daily living.
- Age alone is not a red flag for driving safety. The media often emphasizes age when an older driver is involved in an injurious crash.
- Health care providers should take the approach of optimizing safe driving rather than simply stopping older adults from driving.

Mr. Phillips, an 82-year-old man *with a history of hypertension, congestive heart failure, atrial fibrillation, macular degeneration, and osteoarthritis, comes to your office for a routine check-up. Mr. Phillips ambulates with a wide-based ataxic gait, uses a walker, and has impaired standing balance. He is unable to stand from the exam chair without multiple attempts and use of his arms, and he reports feeling temporarily lightheaded on standing. He is no longer able to read newspaper print and tells you he avoids driving at night and only goes short distances to run errands, get to appointments, and meet weekly with his bridge club.*

Mrs. Bales, a 90-year-old woman, *lives in a continuing care retirement community with her 92-year-old husband for whom she is the primary caregiver because of his Parkinson disease. Her past medical history includes early macular degeneration, degenerative joint disease, and hypertension. She has decreased range of motion in her neck and walks without an assistive device but with a wide-based gait. She drinks a moderate amount of alcohol daily and was recently started on oxycodone for chronic pain.*

This chapter discusses the first steps of the Plan for Older Drivers' Safety (PODS) and, in particular, provides a strategy for answering the question "Is the older adult at increased risk of unsafe driving?" This part of the evaluation process includes clinical observation of the older adult, identifying red flags such as medical conditions, including cognitive and physical conditions, symptoms associated with chronic illnesses, and medications that may impair safe driving and inquiring about new-onset driving behaviors that may indicate declining traffic skills. The goal of the assessment is to facilitate driving safety among older adults and assure that those who can drive safely are helped to do so for as long as possible.

STEPS TO ANSWER THIS QUESTION

Observe the older adult throughout the encounter.

Careful observation is often an important step in diagnosis. During all patient encounters, clinicians should observe the older adult and be alert to:

- Sensory impairment such as decreased vision, hearing, or sensation in the extremities

- Inattention or loss of insight regarding personal care (e.g., poor hygiene and grooming)
- Impaired ambulation (e.g., difficulty walking or getting into and out of chairs)
- Difficulty with way finding (e.g., getting to or out of the office)
- Impaired attention, memory, language expression, or comprehension
- Difficulties or lack of insight related to managing medical encounters, such as missed appointments, repeated phone calls for the same issues, or appearing on the wrong day

In the example above, Mr. Phillips has difficulty with balance and strength as revealed by his inability to get up from the chair without multiple tries and his wide-based gait. Moreover, he has visual changes such that he cannot read normal size print materials. This raises a question as to whether he can operate vehicle foot pedals properly or see well enough to both drive and find his way safely. His physical limitations may not preclude driving, but they may be indicators that more assessment is indicated.

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

During an interview of the older driver, clinicians should be alert to "red flags," i.e., any medical condition, medication, or symptom that can affect driving skills, due to acute changes or chronic functional deficits (see Chapter 9). Health symptoms have been noted to be more strongly associated with driving difficulties than health conditions.[1] For example, Mr. Phillips (introduced in previous chapter) presents with lightheadedness associated with atrial fibrillation. Symptoms of dizziness should be considered as a red flag, and Mr. Phillips should be counseled to cease driving until his symptoms are diagnosed, treated, and resolved. Significant pain and associated limitations in function seen with degenerative joint disease and use of opioids for

Table 2.1 - Clinical Risk Factors for Impaired Driving

Risk Factor	Signs and Symptoms
Physical capabilities	■ Impaired balance ■ Vision and/or hearing impairment (not hearing emergency sirens or horns honking, not seeing street signs) ■ Functional impairment, such as sensory or range or motion (particularly ankle) with regard to use of gas or brake pedals ■ Decreased ability to turn the head to fully visualize an area ■ Slow response to visual or auditory cues ■ Problems with reflexes (not reacting quickly when there is a need to brake suddenly)
Cognitive ability	■ Decreased short-term memory ■ Decreased or impaired way finding ■ Easily distracted ■ Inability to learn new information quickly ■ Inability to recognize unsafe situations ■ Confusion over names and dates ■ Difficulty with instrumental activities of daily living
Driving ability	■ Not using turn signals appropriately Difficulty turning the wheel and making turns ■ Difficulty staying in the correct driving lane ■ Difficulty judging the space between cars or upcoming exits ■ Hitting curbs when parking or backing up ■ Stopping in traffic inappropriately ■ Not following stop signs, yield signs, traffic lights, etc. ■ Not noticing workmen or activity on the side of the road ■ Inappropriate speeds for the weather/driving conditions History of traffic violations, minor crashes, or warnings

pain management, such as those noted with Mrs. Bales, should also be considered "red flags." Other conditions may impact safety and/or require training to use compensatory techniques when driving, e.g., limited range of motion in the neck. Acute or chronic pain can also be distracting and make it unsafe for older adults to drive. Many factors can put individuals at risk of unsafe driving and should be explored during office visits (Table 2.1).

Most older adults have at least one chronic medical condition and many have multiple conditions, the most common including arthritis, hypertension, hearing impairments, heart disease, cataracts, dizziness, orthopedic impairments, and diabetes.[2] The impact of multiple comorbidities is not well known. Some of these conditions have been associated with driving impairment by virtue of both their symptoms and their treatments (e.g., arthritis and pain and fatigue; medication adverse effects) that can influence driving safety. These conditions will be discussed in more detail in subsequent chapters, including a reference list of medical conditions and medications that may affect driving in Chapter 9, with some of the more common chronic conditions noted below in Table 2.3. Chronic illness and associated symptoms should be acknowledged and addressed so that driving, in some situations, can be safely continued.

Older adults generally take more medications than their younger counterparts and are more susceptible to adverse effects. The American Geriatrics Society Beers Criteria® for potentially inappropriate medication use in older adults is a useful tool for screening medication lists.[3] Whenever medication is prescribed or the dosage of a current medication is changed, it is important to inform the older adult of potential effects or drug-drug interactions that might affect driving safety. Adverse effects, such as drowsiness, confusion, dizziness, or nausea, can impact the ability to concentrate and drive safely. Concern may be heightened in the face of already-present underlying concerns about visuospatial processing speed, cognition, or functional changes (e.g., the Trails B test [see Chapters 3 and 4]), slow response time, and decreased attention.

The review of systems can reveal symptoms that may interfere with driving ability. For example, pain, fatigue, episodes in which there has been a loss of consciousness, confusion, falling asleep while driving, feelings of faintness, memory loss, visual impairment, numbness or tingling in extremities, history of falls, and muscle weakness (e.g., difficulty getting up from a chair) all have the potential to affect driving safety.

The clinical team should not make assumptions about whether an older adult is driving and should always be sure to ask about this important activity of daily living. Sometimes, older drivers themselves or caregivers may raise concerns. If the older adult or his or her caregiver asks your opinion about whether the individual is safe to drive, any concerns that have been noted should be explored. Has the older adult had any recent crashes, near-crashes, or citations? Is he or she feeling uncomfortable or unsafe driving? A list of specific driving behaviors that could indicate concerns for safety are found in the Fitness to Drive Measure (freely available online).[4] Clinicians should encourage caregivers to monitor and observe skills of the older adult driver in real-world traffic situations, with full disclosure and permission from the older driver. Concern should be noted if caregivers will not drive with the individual or let others drive with him or her. If the older adult is living in a retirement community (or continuing care retirement community, assisted living, etc.), it may be helpful to obtain collateral history from other observers about whether they

have noticed any driving behaviors that might indicate unsafe driving (e.g., inappropriate speeds, not stopping at stop signs, not slowing over curb bumps, bumping into/scraping other cars).

Age alone is not a red flag! Unfortunately, the media often emphasizes age when an older driver is involved in an injurious crash. This "ageism" is a well-known phenomenon in U.S. society.[5] Although many people experience a decline in vision, cognition, or motor skills as they get older, these changes occur at different rates, and older adults experience functional changes to different degrees. Further, older adults have different perceptions of their own driving ability and perceptions of how others perceive their driving ability. These beliefs are related to self-regulatory driving ability.[1] The focus should be on functional abilities (cognitive and physical), symptoms, and medical fitness to drive versus on age per se. Identifying problems in these areas and managing them appropriately is one of the ways in which the clinical team may be able to help older adults continue to drive safely rather than simply stopping them from driving.[6]

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

A health risk assessment is a series of questions intended to identify potential health and safety hazards in the older adult's behaviors, lifestyle, and living environment (Table 2.2). The health risk assessment is tailored to the older adult and generally focuses on physical activity, falls, drinking (alcohol), medication management, sleep, nutrition, and driving. Relevant questions about driving as part of the health risk assessment are shown in Table 2.2. Alternatively, more open-ended questions

Table 2.2 - Questions About Driving

Exploratory Questions

How did you get here today?

Do you drive?

How much do you drive?

Do you drive to the store? hairdresser? bank?

Do you drive at night?

Have you lost any confidence in your ability to be a safe driver?

Have others expressed concern about your driving?

What would you do if you had to stop driving?

Are you comfortable when seated in your car?

Tell me about your ability to see signs when driving? To manage the steering wheel? To manage the foot pedals? To visualize the traffic lights and signs?

Do you often get lost while driving?

Have you received any traffic violations or warnings in the past 2 years?

Have you had any crashes or near-crashes in the past 2 years?

Questions for caregivers if concerns are raised:

How often do you believe _____ drives?

Have you had the opportunity to ride with _____ in the past month?

Do you feel safe in the car when riding with _____?

Do you have any concerns about _____'s driving ability?

If a patient presents a form from the licensing agency, the clinician should ask why they are being asked to submit the form.

Health Risk Assessment Questions

- Physical activity and diet history
- Daily alcohol intake
- Daily medication management concerns or use of sedating medications
- History of falls
- Use of seat belts
- Sleep history

can be asked such as: "Tell me how you obtain your groceries," "How do you get to the hairdresser?" or "What do you do during the course of a routine day?" These can then lead into more specific questions about driving and/or alternative options for transportation.

If the older adult drives, then his or her driving safety should be addressed if red flags are raised. In addition, whenever there is any change in a medical condition or medication that could impact driving, the impact on driving safety should be considered. For example, Mrs. Bales should be cautioned regarding driving because of starting on a narcotic for pain management, and she should be encouraged to initiate a short driving-free period while she evaluates the impact of the new medication on her driving skills.

In contrast, for chronic medical conditions, driving safety is addressed by formally assessing the functions important for driving (see Chapter 3). Chronic medical conditions and their associated symptoms should be considered when evaluating driving ability and safety. For example, an older adult with congestive heart failure may have an acute exacerbation with increased shortness of breath, fatigue, and difficulty concentrating. The exacerbation of the heart failure can result in the need for increased use of diuretics and, therefore, risk of dizziness, fatigue, or electrolyte imbalance. This individual might not be safe to drive and should be counseled to avoid driving until the symptoms of heart failure and the adverse effects from medication management have resolved. Ongoing evaluation after stabilization is needed. The clinician should also recommend formal assessment of function as described in Chapters 3 and 4 if the older adult shows any signs of chronic functional decline. (For more complete recommendations on medical conditions (e.g., diabetes) and medications that may affect driving, see Chapter 9.)

If the older adult does not currently drive, ask if he or she ever drove and what the reason was for stopping. If the older adult voluntarily stopped driving because of medical reasons that are potentially treatable, it may be possible to help him or her 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 individual's improvement with treatment. Referral to a driver rehabilitation specialist in these cases is strongly encouraged (see Chapter 5).

When exploring driving ability, it is very useful to also speak with a caregiver to confirm what the older adult has stated. As noted above, if the older adult lives in a retirement community or continuing care retirement community, the staff or colleagues and friends that have driven with the individual may, with permission, also be able to provide invaluable information because they have had the opportunity to observe the individual's driving activities, techniques, and safety.

If caregivers are particularly concerned, it may be helpful to have them review the Fitness-to-Drive Screening Measure (http://fitnesstodrive.phhp.ufl.edu/us/). These questions include situations such as making left-hand turns, hazard detection, and lane changes and classify the driver as being at-risk, routine, or accomplished. This can help to start a conversation about driving safety.

Understand the older adult's mobility needs.

Asking about the older adult's mobility needs and encouraging him or her to begin exploring alternative transportation options before it becomes imperative to stop driving is advised. Resources such as the free program called CarFit (http://www.

car-fit.org) can help optimize the "fit" of the car to the individual to ensure that components like side and rearview mirrors are properly adjusted and that the seatbelt fits properly. When a diagnosis is encountered that may lead to the need for adaptive equipment or driving cessation, the clinician should advise the older adult of the potential impact on driving. For example, an older adult with multiple sclerosis could be advised that hand controls might be necessary in the future. Without ongoing discussion, older adults who have not planned for any forms of alternative transportation may feel that they have no choice but to continue driving, increasing their likelihood of continuing to drive after they may have lost the capacity to do so. Even if alternative transportation options are not needed at this point, it is wise for older adults to plan ahead in case it becomes necessary. These are difficult conversations to have, and clinical team members should remember to be respectful and sensitive knowing that driving is often an integral part of independence. Some techniques include giving specific examples of the reasons for the discussion rather than generalizations, and noting, for example, if the older adult is having a harder time turning his or her head than previously. Explaining that this can make visualization problematic is likely to be more helpful than just stating that the older adult can't drive anymore. Further, the clinical team member should make sure to help find alternatives to driving, such as recommending the use of taxi services or transportation network companies such as Uber or Lyft. The older adult may be so used to driving that he or she has never considered alternatives.

Some questions to use to initiate this conversation using the Hartford "We Need to Talk" discussion materials[7] include:

- How do you usually get to shopping or health care appointments?
- If your car ever broke down, how would you get around? Is there anyone who can give you a ride? Can you use public transportation, such as a bus or train? Does your community offer a shuttle service or volunteer driver service? Have you heard of or ever used a transportation network companies such as Uber or Lyft?
- Are there walkable options for groceries, medications, or other activities and services?

It can also be useful to explore the cost/benefit of driving (such as car maintenance and insurance) versus using a taxi service, a transportation network company, or other type of public or community transportation.

Older adults should be encouraged to plan a safety net of transportation options. It can be helpful to link independent mobility to clinical concern for the older adult's well-being with phrases such as "Mobility is very important for 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 of educational materials on alternatives to driving are listed in Appendix B and include resources from the National Aging and Disability Transportation Center.[8] Other resources are available through AARP (https://www.aarp.org/auto/driver-safety/driving-tips/) and the University of Michigan Transportation Research Institute (www.umtri.umich.edu/critical-issues/senior-mobility).[9] If an older driver must stop driving, the transition will be less traumatic if he or she has already created a transportation plan. In addition, the handout *Getting By Without Driving, or Transportation Options for Older Adults* can help the older adult get started (Appendix B). Useful options such as Go Go Grandparent (https://gogograndparent.

com/) may be available and can be used for direct transportation to appointments or activities, as well as to get groceries delivered.

Counseling Older Adult Drivers in the Inpatient Setting

When caring for older adults in the acute hospital setting, it is critical to use this opportunity to consider if the individual is currently safe to drive.10 Discharge from acute care is a good time to review how the individual will get medications and groceries and to their medical appointments. Counseling may include recommendations for temporary or permanent driving cessation or for driving assessment and rehabilitation when the individual's condition has stabilized. Such recommendations are intended to promote safety and, if possible, help the older adult develop a transportation plan during the recovery process and, as appropriate, work toward regaining his or her ability to drive. Case managers may be able to assist with this process. The transportation plan should be included in the discharge summary that goes to the rehabilitation/subacute setting and/or to the older adult's primary care provider.

RED FLAGS FOR FURTHER ASSESSMENT

Older Adult Driver's or Caregiver's Concern

Regardless of the setting of care, older adult drivers and their caregivers may express concerns about driving safety. If so, the cause of concern should be investigated, specifically if there have been recent motor vehicle crashes, near-crashes, traffic tickets, instances of becoming lost, trouble making sudden lane changes, trouble with left hand turns, drifting into other lanes, braking or accelerating suddenly without reason, failing to use the turn signal, keeping the signal on without changing lanes, or if there is poor night vision, forgetfulness, or confusion. Function should be evaluated using the Clinical Assessment of Driving Related Skills (CADReS) tests (Chapters 3 and 4).

Acute Events

Any acute health event, whether requiring hospitalization or not, is a red flag for immediate assessment of driving safety. If the older adult has been hospitalized, it is particularly important to counsel him or her as well as caregivers on driving safety issues. As noted above, acute disease exacerbations can serve as an opportunity to address, or readdress, driving concerns. As a general recommendation, older adults should cease driving after an acute event until their primary care provider indicates they are able to drive again. This is particularly important after any of the following common acute events or associated treatments.

- Acute myocardial infarction
- Acute stroke or other traumatic brain injury
- Arrhythmia (e.g., atrial fibrillation, bradycardia)
- Lightheadedness, dizziness
- Orthostatic hypotension
- Syncope or presyncope
- Vertigo
- Seizure
- Surgery
- Delirium from any cause
- Newly prescribed sedating medications or those that can cause confusion or dizziness
- Acute psychiatric diseases impairing cognitive function or decision making

Chronic Medical Conditions

Older adults may require focused assessments to determine the impact of the following chronic medical conditions on their level of function (detailed information in Chapter 9).

Table 2.3 - Chronic Medical Conditions that May Impact Driving

Medical Condition	Examples
Diseases/ conditions affecting vision	■ Cataracts ■ Diabetic retinopathy ■ Macular degeneration ■ Glaucoma ■ Retinitis pigmentosa ■ Field cuts ■ Low visual acuity even after correction
Cardiovascular disease, especially when associated with presyncope, syncope, or cognitive deficits	■ Unstable coronary syndrome ■ Arrhythmias ■ Palpitations ■ Congestive heart failure ■ Hypertrophic obstructive cardiomyopathy ■ Valvular disease
Neurologic disease	■ Dementia ■ Multiple sclerosis ■ Parkinson disease ■ Peripheral neuropathy ■ Brain injury ■ Spinal cord injury
Psychiatric disease	■ Mood disorders ■ Depression ■ Anxiety disorders ■ Psychotic illness ■ Personality disorders ■ Alcohol or other substance abuse
Metabolic disease	■ Type 1 and type 2 diabetes mellitus (especially with hypoglycemic attacks or severe swings in blood glucose) ■ Hypothyroidism
Musculoskeletal disabilities	■ Arthritis and foot abnormalities ■ Contractures and decreased range of motion ■ Inflammation ■ Pain
Respiratory disease	■ Chronic obstructive pulmonary disease ■ Obstructive sleep apnea
Chronic renal failure	■ End stage renal disease ■ Hemodialysis
Cancer and chemotherapy	■ Weakness and extreme fatigue ■ Medication side effects
Insomnia	■ Sleep apnea ■ Restless leg syndrome ■ Anxiety/depression/pain contributing to insomnia

Medications

Many nonprescription and prescription medications have the potential to impair driving ability, either alone or in combination with other drugs. Combinations of drugs may affect drug metabolism and excretion, and dosages may need to be adjusted accordingly. In addition, clinicians should always ask about alcohol and marijuana use and timing of intake (for more information on each medication class that may affect driving, see Chapter 9). Medications with strong potential to affect driving ability include:

- Anticholinergics
- Anticonvulsants
- Antidepressants
- Antiemetics
- Antihypertensives
- Antiparkinsonian agents
- Antipsychotics
- Benzodiazepines and other sedatives/ anxiolytics
- Hypoglycemic agents
- Muscle relaxants
- Narcotic analgesics
- Stimulants
- Hypnotics
- Marijuana
- Alcohol
- Over-the-counter agents with anticholinergic adverse effects such as sleeping agents or allergy/cold medications, which are often first-generation antihistamines

Review of Systems

The review of systems can reveal symptoms or conditions that may impair driving performance. Symptoms associated with acute and chronic medical problems are critically important red flags and should be carefully explored.

Assessment and Plan

Clinicians should consider screening at-risk older adults using red flags and identifying common signs, symptoms, and medical conditions associated with impairment of driving safety in every clinical setting. When formulating a diagnosis and treatment plan for older adults, driving safety should be addressed whenever needed. Identification of risk early on may facilitate primary prevention and interventions to prevent the loss of driving ability. Ongoing monitoring of chronic illness may facilitate secondary prevention efforts to rehabilitate the loss of driving skills and attempts to restore those skills. Red flag indicators and acute events may signal that loss of driving skills is irreversible , and tertiary prevention should include recommending alternatives to driving to avoid harm to the older adult and others. It is also critically important to recognize that some older adults may have impaired insight with regard to their driving safety, and self-reports should be confirmed with caregivers or others who may be familiar with the older adult's driving ability.[11] In summary, assessment of driving safety can and should be routinely integrated into the care plan when:

- A new diagnosis or change occurs in any condition that has been associated with impaired driving
- A new medication is prescribed, or the dosage of a current medication is changed
- A change in functional abilities is reported
- As part of an annual wellness visit
- Following a care transition (e.g., acute care to subacute care or home setting; home setting to a continuing care retirement community or assisted living)

Table 2.4 - Organ Systems and Symptoms

Organ System	"Red Flag" Symptoms
General	■ Fatigue ■ Dizziness ■ Weakness ■ Pain
Head, ears, eyes, nose, throat (HEENT)	■ Headache ■ Double vision ■ Visual changes ■ Vertigo ■ Change in ability to read ■ Change in visual acuity ■ Decreased hearing
Respiratory	■ Shortness of breath ■ Use of oxygen
Cardiac	■ Chest pain ■ Dyspnea on exertion ■ Palpitations ■ Sudden loss of consciousness ■ Increased swelling in the legs
Musculo-skeletal	■ Muscle weakness ■ Pain ■ Joint stiffness ■ Decreased range of motion
Neurologic	■ Loss of consciousness ■ Fainting ■ Seizures ■ Weakness ■ Paralysis ■ Tremors ■ Loss of sensation ■ Numbness ■ Tingling ■ Changes in memory and ability to recall recent events, or difficulty with word finding, way finding, decision making, or concentration ■ Changes in psychological stability or orientation: confusion, psychosis, mania, disorientation
Psychiatric	■ Depression ■ Hallucinations ■ Anxiety ■ Delusions ■ Delirium ■ Psychosis

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CHAPTER 3 SCREENING AND ASSESSMENT OF FUNCTIONAL ABILITIES FOR DRIVING

KEY POINTS

- An assessment of underlying functional abilities important for safe driving (e.g., vision, cognition, motor) should determine the need for further evaluation and subsequent intervention, and/or for a more specialized driving evaluation.
- Significant functional impairment may necessitate cessation of driving and the need for assistance in developing a plan for safe alternative methods of transportation to maintain mobility.
- Older adults with physical and/or visual impairments have a greater potential to benefit from intervention to continuing safe driving than those with cognitive impairment, because adaptive equipment and compensatory strategies are available.
- No single assessment can accurately predict the ability to drive safely; a target set of assessment tools should be used to determine risk in older adults based on functional impairments.
- The Clinical Assessment of Driving Related Skills (CADReS) is a toolbox of evidence-based practical, office-based assessment tools to screen for impairment in the key areas of vision, cognition, and motor/sensory function as they relate to driving.
- Self-report or self-assessment has not been shown to be an adequate measure of fitness-to-drive.

Mr. Phillips *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, which was his fault. He has also had several near-crashes in the past 2 years. He has never been lost while driving.*

In discussing Mr. Phillips' transportation options, you learn that 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? Besides, I don't want to impose on my family or friends."

Increasing longevity in the U.S. population means that, because of comorbid conditions, many older adults may outlive their ability to drive safely. Men are projected to live approximately 6 years and women 10 years longer than their ability to drive.[1] The implication of this projection for clinical practice is the increasing need for an evidence-based "decision" to be made about driving safety, or stopping driving, for independent community-dwelling adults. This chapter focuses on the assessment of functional abilities needed to safely operate a motor vehicle, or "fitness to drive." Fitness to drive is a description of a driver who has an absence of any functional (sensory–perceptual, cognitive, or psychomotor) deficit or medical condition that significantly impairs an individual's ability to fully control the vehicle while conforming to the rules of the road and obeying traffic laws.[2]

Chapter 2 outlined what factors or "red flags" to

observe if driving safety is of concern to the older adult, caregiver, or clinical team member. This chapter goes beyond the initial identification of potential problems to describe the screening and assessment process of older adults who have been recognized as having a possible safety risk and need further exploration of their fitness to drive.

In determining fitness to drive, it is important to distinguish between **screening** and a **comprehensive driving evaluation**. When **screening**, the intention is to identify risk. The screening is typically brief, with the outcome intended to monitor risk over time or refer for further evaluation when appropriate. Further evaluation will identify at-risk drivers who may benefit from intervention strategies or need to cease driving. This more comprehensive evaluation may include referral to occupational therapy or driving rehabilitation to obtain the data necessary to determine a client-centered, individualized plan. The goal is to optimize the ability of older adults to continue to drive safely for as long as possible.

The clinical team may detect problems that (1) allow early intervention and may prevent disability and prolong driving ability, (2) identify impairments that can be remediated, (3) identify strategies to compensate for a medical condition, and/or (4) necessitate plans for the timely transition to alternative means of transportation.

Primary prevention addresses issues to prevent the loss of driving ability. This includes providing strategies to support driving abilities as well as early intervention or "starting the conversation" to introduce the importance of developing a transportation plan that for some may lead to driving retirement. Some transitions are unpredictable and will require an abrupt but supportive approach, such as driving cessation after a severe stroke. Other transitions are more predictable but allow time to build awareness and knowledge in preparation for transition through a transportation plan that shifts the focus to preservation of community mobility as a non-driver. This transition approach is helpful for all older adults, but especially for those facing chronic medical conditions that may eventually affect driving (e.g., diabetes, dementia, Parkinson disease). For example, in addition to explaining how to manage blood sugar levels with older adults with diabetes, it may be helpful to explain how managing blood sugar levels may help to minimize peripheral nerve damage and maintain eye health to prolong fitness to drive. This knowledge may be potentially motivating and important as an incentive to optimize adherence.

Secondary prevention attempts to remediate any loss of functional skills needed for driving. This may include hand controls to compensate for amputation or neuropathy, as well as management of depression, vision loss, or cognitive flexibility to prevent further loss of driving capacity.

Tertiary prevention requires a transportation plan because the loss of driving skills is irreversible and creates known risk to the individual and the community. Recommendation for cessation is not enough, as the older adult needs assistance to maintain community engagement through a transportation plan.

SCREENING VERSUS ASSESSMENT

Screening

The goal of screening is to broadly identify older adult drivers who might be "at risk" of unsafe driving. Screening tools should be brief and easy to administer and must have evidence that supports their value in identifying the possibility of driving risk. In the process of a broad screening, some individuals who are not at risk will also be incorrectly

identified. However, because of the safety risk to individuals and society, over-identification is necessary. With this in mind, a screening must always be followed by an evaluation before fitness-to-drive can be determined.

Assessment

Assessment requires more in-depth evaluation to distinguish between individuals who are truly at risk and those who are not. Screening and assessment tool scores do not by themselves predict crash risk for several reasons, including the low occurrence of crashes, and that older adults tend to drive less and engage in less risk-taking behavior (e.g., speeding, drunk driving). It is the clinical skill, expertise, and reasoning of the health care provider using the screening outcomes of the older adult that allows an educated judgment about probable driving outcome.

Multiple assessment tools are used for screening and assessment of driving.[3] However, there is no single tool that should be used to determine fitness to drive.[4-6] While the on-road assessment is widely accepted as the gold standard, even a "driving evaluation" has different contexts.[7] For example, the driving evaluation completed **for licensure** is more commonly named a "driving test" and typically requires 10-15 minutes to complete. The intention of this test is typically to evaluate knowledge of rules of the road and a checklist of skills required to operate a vehicle. The focus of driving instructors at **driving schools** is on teaching driving competence though lessons or skill building to ensure that drivers adhere to the correct maneuvers for vehicle operation while obeying traffic laws. Thus, their driving evaluations focus on gaps in learning, learning new skills for managing a vehicle, and testing knowledge of roadway rules and laws. Older adults have typically been driving for many decades and are experienced drivers that have developed overlearned skills and abilities. Even a driver with significant cognitive decline that includes episodes of confusion or diminished judgment may be capable of demonstrating retained basic driving skills when the test is structured with each action directed, such as "turn right at the stop sign." In contrast, **a comprehensive driving evaluation** includes a clinical evaluation and an on-road portion to evaluate higher functioning abilities in the executive domains of decision-making, navigation, and problem solving, essential for determining an experienced older driver's fitness to drive.

In response to the complexity of driving terminology, the Transportation Research Board of the National Academies for Science, Engineering and Medicine's Committee for Safe Mobility for Older Persons[2] has developed definitions for screening, assessment, and evaluation (Table 3.1).

While there is an increasing array of computer-based testing tools, clinicians need to carefully consider their use with the older adult population. It is important to consider familiarity and acceptance by an individual who may not use technology frequently. Performance on this type of testing may result in test failure because of lack of familiarity with the technology rather than the tools value in measuring deficits in fitness to drive.

Process of Screening and Referral

As the first step of the process, clinical team members identify driving as the patient's primary mode of transportation and if their medical impairments will affect driving. If both are true, the team members may use the screening/assessment tools described in this chapter to ascertain potential driving risk. Although cut-off scores might be provided, it is important to remember that these assessment tools document only the presence of a potential impairment, not its cause or implications.

Table 3.1 - Screening, Assessment, and Evaluation Terminology

Term	Defintions
Road test	An examination of driving maneuvers and knowledge of rules of the road performed in a motor vehicle on a public highway or street
Driving test	An examination including specified driving maneuvers performed in a motor vehicle
Evaluation	Obtaining and interpreting data to document results and inform an individualized mobility plan
Assessment	Use of specific measurements, tools, or instruments during the evaluation process
Screening	Obtaining and reviewing data to determine the need for evaluation
Self-screening	An individual obtains and reviews his or her own data to determine the need for evaluation; relies on insight and self-reflection
Proxy screening	An individual obtains and reviews data to determine the need for evaluation for another person
Evaluator screening	A professional skilled in a specific screening tool obtains and reviews data to determine the need for evaluation of a specific individual
Driving assessment	Use of an on-road test to measure and qualify driving skills and abilities, which may be triggered by a screening outcome that indicates increased risk of driving impairment or crash involvement
Driving evaluation	Obtaining and interpreting data and documenting results to inform an individualized mobility plan based on an individual's driving abilities and/or potential to be an independent driver, or inform a determination of fitness to drive
Clinical driving evaluation	Obtaining and interpreting data and documenting results to determine fitness to drive through assessment of sensory/perceptual, cognitive, and/or psychomotor functional abilities using specific tools or instruments
Comprehensive driving evaluation	A complete evaluation of an individual's driving knowledge, skills, and abilities that includes (1) medical and driving history; (2) clinical assessment of sensory/perceptual, cognitive, or psychomotor functional abilities; (3) on-road assessment, as appropriate; (4) an outcome summary; and (5) recommendations for an inclusive mobility plan, including transportation options

Using the outcomes of several of the screening tools and the medical history, health care providers are in the best position to determine if the potentially at-risk older adult may benefit from a referral to another health care provider (e.g., ophthalmologist, occupational therapist, clinical neuropsychologist, physical therapist) for evaluation of a specific deficit (e.g., visual acuity, balance problem, instrumental activities of daily living [IADL] issues) before considering a referral for a comprehensive driving evaluation. Clinical team members may also determine, based on the evidence from the medical history and screening outcomes, that further evaluation and/or intervention is not warranted.

Examples include macular degeneration with visual acuity below state standards, progressive dementias, or advanced Parkinson disease. In these cases, recommendations may be for driving cessation and referral to appropriate team members for alternative transportation support. In contrast, when the results of screening indicate no potential problems, education for health and driving promotion should be offered rather than further evaluation.

Finally, when the older adult has a chronic, but stable medical condition and the outcomes from the assessment tools suggest potential impairments, health care providers can then determine whether

to refer the older adult to a driving rehabilitation specialist (DRS) for a comprehensive driving evaluation. In areas where DRSs are limited and/or the history suggests other complex IADLs are compromised, a comprehensive occupational therapy evaluation of IADLs may be warranted. This is further described in Chapter 5.

Clinical team members and health care providers must function within their scope of practice and use clinical judgment regardless of any test scores to make decisions about fitness-to-drive of older adults. All available information, including driving and medical history, should be considered. The specific tools discussed here were selected for their applicability and feasibility in an office setting, along with their correlates with impaired driving outcomes, but they cannot cover every important function needed for driving.

BROACHING THE ISSUE OF A DRIVING SCREENING OR ASSESSMENT WITH THE OLDER ADULT

The primary message should be one of concern and assistance, balancing the older adult's or caregiver's concern about the safety of the older adult and/or the public with the older adult's need for transportation. Care should be taken to avoid an adversarial position, because this may prompt an unproductive reaction of defensiveness. The conversation should begin with a commitment to explore all reasonable options for keeping the older adult mobile in his or her community. Points to emphasize include that screening and assessment are necessary to identify ways to help the older adult continue to drive safely as long as possible and that current technology, roadways, and rehabilitation offer many helpful interventions to do so. If the older adult expresses fear that the clinical team will "take away my driver's license," it may be helpful to offer reassurance that only the state licensing agency has that type of legal authority (see Chapter 7).

"Mr. Phillips, *I'm concerned about how your health condition is affecting your driving. Your son tells me that you were recently in a car crash and that you've had several near-crashes in the past 2 years. Although you have managed your medical conditions, I believe their combined effect may have progressed to the point that it may be affecting your driving skills and ability. I am going to ask you to do a few simple tests that can measure functional abilities needed for safe driving, such as walking down the hall while I time you. This will help us find out if there are areas we need to look into further.*

"Based on your health condition and the results of the tests, we'll do our best to treat or reverse any problems we find. For example, if you're not seeing as well as you should, we'll see what we can do to improve your vision. If you have difficulty turning your head, a referral to a physical therapist may be in order. If there's something we can't improve, then we may consult a driving rehabilitation specialist to explore all possible solutions. This type of specialist, typically an occupational therapist, will offer you further testing and then may go out on the road with you to see how you're driving. The driving rehabilitation specialist can develop a plan that will include, if at all possible and safe, recommendations, strategies, and maybe adaptive equipment for you to consider. Whenever possible, the driving rehabilitation specialist will recommend ways to make your driving safer. Our goal is to keep you on the road for as long as you are safe to drive."

FUNCTIONAL AREAS ASSESSED FOR DRIVING

Three key functional areas are considered as the foundation for determining fitness to drive: vision, cognition, and motor/somatosensory function. Any impairment in these areas has the potential to increase the older adult's risk of being involved in a crash and/or lost. Once these areas are assessed, the health care provider can determine if more information is required in one or all areas or if referral to a specific specialist for further evaluation or intervention is needed (e.g., ophthalmologist, neuropsychologist, occupational therapist, physical therapist, DRS).

Vision

A vision assessment includes assessment of visual acuity, visual fields, and contrast sensitivity.

Vision is the primary sense used in driving and is relied on heavily for successful execution of driving.[8] All states require vision testing to initially obtain a driver's license, although the limits differ. Several states also require vision testing at the time of license renewal. For information on these laws, see Chapter 8.

Visual Acuity: Visual acuity commonly declines with age, 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 conditions such as cataracts, glaucoma, diabetic retinopathy, and age-related macular degeneration (ARMD).[9] Although distance visual acuity appears to be crucial to many driving-related tasks, declines in near visual acuity may be associated with difficulty seeing/reading maps or gauges and controls inside the vehicle.

Most research studies show that visual acuity is not linked to crash risk,[4,8,10-12] which may be because of the variability in visual requirements by state licensing agencies and/or visual acuity testing of stationary targets does not represent the motion-based driving environment.[11] However, there is some evidence that visual screening laws are associated with decreased motor vehicle crash fatality rates.[13] Cataracts are a major concern associated with vision and driving. The gradual development of cataracts results in a slow change in vision, which the older adult may not recognize. Identification and removal of cataracts can effectively improve driving safety.[14-16]

General visual acuity can be easily measured in the office setting using readily available tools such as a Snellen chart (www.provisu.ch/Age/Snellenchart_en.pdf). Near visual acuity can be assessed by the Rosenbaum pocket chart, and there are several free apps available for mobile devices.

Visual Field: Visual fields may decline as a result of natural aging changes such as ptosis, a drooping of the eyelid most commonly found in the older population. Most visual field cuts, however, are the consequence of medical conditions such as glaucoma, optic neuritis, detached retina, and stroke/traumatic brain injury. Drivers with loss of peripheral vision may have trouble noticing traffic signs or cars, vehicles in adjacent lanes, and/or pedestrians on sidewalks or street crossings. However, although studies on driving indicated that drivers who had at least moderate to severe vision impairment were more likely to be involved with crashes, not all studies have shown an association.[11] There are large individual differences when there is field loss and evidence suggests that good drivers are able to compensate for field cuts;[11,17] the science examining the relationship between visual field loss and driving performance is still evolving.[8] Visual fields are measured through confrontation testing and, if deficits are noted, formal visual field

perimetry scanning may be indicated, especially if required by the state licensing authority.

Contrast Sensitivity: Contrast sensitivity decreases as a normal process of aging. While this loss is not an issue during daylight, it becomes more difficult for older adults to see a target against similar background in low light. Thus, older adult drivers may have problems distinguishing cars or pedestrians against the driving background during dawn and dusk hours, in foggy conditions, or during storms. Although research has shown that contrast sensitivity is associated with increased crash risk,[8,18] the impaired contrast sensitivity associated with crash is typically associated with drivers who have cataracts (which improve with surgery) or Parkinson disease.[11] Thus, more research is needed to produce standardized, validated cut-off points for contrast sensitivity and to identify the level at which impairment results in higher crash risk. Education about this normal aging process is important and addressed by offering strategies that include avoiding driving in early morning, dusk, or during fog or storms. Further evaluation for contrast sensitivity may be warranted if the older adult has frequent falls, because the same contrasts in the walking environment are an issue and falls and driving risk are related.[19]

Several other visual functions are important in driving (glare recovery, light adaptation, accommodation, dynamic visual acuity, color perception), but office-based measures for screening and assessment are neither easily available nor linked to crash risk. Therefore, they are not discussed here.

Cognition

Cognitive assessment includes functional assessments of memory, visual perception, processing speed, attention, executive function, language, and insight.

Driving requires timely visual and cognitive processing to make appropriate decisions in a dynamic and complex environment. The best assessment tools integrate several cognitive processes (e.g., divided attention, visual processing, processing speed) to test high-level cognitive processes or executive functioning.[20] At the clinical team level of screening, specific cognitive abilities and skills can be assessed for performance indicative of risk. Because these functions are the building blocks of more complex abilities, if an older adult has a significant issue with any basic cognitive skills, driving will likely be affected.

Attention: Because of the dynamic and changing environment, demands on attention can be significant, especially in areas of high traffic or during rush hour traffic. Drivers must possess sufficient selective attention (i.e., the ability to prioritize stimuli and focus on only the most important) to attend to critical stimuli (e.g., traffic lights, other vehicles, pedestrians, bicyclists, scooters) without being distracted by irrelevant ones (e.g., billboards, city sights). In addition, drivers must possess divided attention to focus on the multiple stimuli required by most driving tasks. For example, the driver must be able to attend to vehicles surrounding him or her while changing lanes for a turn, maintaining a safe speed, and activating the turn signal in the correct direction.

Attentional functioning may decline with age,[21] with divided attention showing more pronounced changes than selective attention.[22] Interestingly, recent studies have suggested that years of experience with driving may enable older drivers to prioritize driving decisions and maximize driving safety (i.e., experience-related compensation).[21] However, regardless of age, driver distraction, including use of cell phones, poses a clear and

significant safety risk to all road users. Older adults should be advised to avoid using cell phones (or other tasks that divide their attention) while driving because of the possibility of decreased working memory, attention reserves, and decreased processing speeds.

Visual Perception/Processing: Visual perception, visuospatial skills, and processing speed are necessary for drivers to organize visual stimuli into recognizable forms and understand where they exist in space. They also need to appropriately respond to incoming information in a timely way. Without these visual-motor skills, drivers would be unable to recognize another vehicle and determine its distance ahead to maintain speed, slow, or stop in relation to that vehicle. In general, processing speed may slow8 and complex visuospatial skills may decline with age, while visual perception remains stable.[23]

Memory: To drive safely, drivers need to remember their destination, how to navigate to the destination, how to operate the vehicle, and to obey traffic rules and regulations.[24] In addition, drivers must be able to retain certain information while simultaneously processing new or unique information (e.g., driving in a school zone or retaining and combining information gathered from scanning right/left), using the skill of working memory. Working memory (and the other cognitive skills to which it contributes) tends to decline with age[25] and depends on the speed of processing, which refers to the speed at which new information can be integrated and retrieved from the memory.[26]

Executive Function: Executive function is an umbrella term that refers to the coordination of several cognitive subprocesses to achieve a particular goal.[27] Executive function includes the ability to initiate a task, problem solve, plan, sequence, and seamlessly shift from one area of focus to another.[28] Executive skills are key determinants of driver strategies, tactics, and safety,[29] such as making the decision to stop at a red light or what to do when the light is green but a pedestrian is still in the path of the vehicle. Although the capacity for this kind of logical analysis tends to decline with age,[26] it is with brain injury that the problems with executive functions become more evident in driving. Because of the overlearned ability of driving, many drivers with executive function deficits can demonstrate the ability to drive familiar routes without a problem. However, if an unexpected event occurs (e.g., a child running onto the street, a familiar road is closed because of construction), older adult drivers with poor executive functioning may not be able to spontaneously modify their expected route or safely alter their driving plan in response to a challenging situation, putting themselves or others at risk. Examples of executive errors may be stopping at a green light or stopping before a highway exit to allow extra time to make the decision to exit.

Insight: Insight is the awareness that a person has about himself or herself, including abilities and limitations. It is important to determine the older adult's understanding of how his or her physical, cognitive, and/or mental limitations may affect fitness to drive. For example, the individual with glaucoma should understand and agree that he or she should refrain from driving at night but may drive without significant risk during daylight and non-rush hours. Individuals with dementia often do not have adequate insight, believing they are fit to drive when they are not.[30]

Motor and Somatosensory Function

Motor and somatosensory function assessment includes functional assessments of functional range of motion, proprioception, and endurance.

Driving requires motor and somatosensory abilities. Because of improvements in technology (e.g., antilock braking systems, power seats, power steering, keyless ignition, traction control systems, backing cameras, cruise control, automatic emergency braking), driving has become much less physically demanding. Thus, even physically frail older adults may have the capacity necessary to continue to operate a motor vehicle. Moreover, DRSs excel at prescribing and training in the use of strategies, devices, or vehicle modifications to compensate for a wide range of physical and somatosensory impairments. Unfortunately, many drivers may be over restricted when advised to stop driving in response to a physical/ somatosensory limitation that may have been addressed through compensation or equipment.

Endurance: Before the act of driving, motor abilities are needed to approach and enter the car safely and fasten the seat belt. The natural process of aging may involve a decline in muscle strength and endurance, flexibility, and joint stability. In addition, osteoarthritis and other musculoskeletal problems are common in older adults. Individuals 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. Fatigue can be an issue for older adults who are driving a long distance, have undiagnosed sleep apnea, are undergoing significant medical treatment (e.g., cancer therapy, kidney dialysis), or have advanced functional loss from severe end organ disease.

Functional Range of Motion: Drivers must be able to manipulate the steering wheel, operate the accelerator and brake pedals, and access the primary and secondary controls of the vehicle (e.g., turn signal, headlights, wipers, climate controls). Range of motion in the neck and shoulder is essential so that the driver can turn his or her head quickly to check the blind spot. However, technology in newer-model vehicles is increasingly compensating for many functional limitations. Examples include backing cameras, fisheye/ panoramic mirrors, and blind-spot warning systems for limited neck range of motion; steering knobs for one-handed driving; low effort steering for limited upper arm mobility; and hand controls for those with lower limb loss or impairment.

Proprioception: Drivers must have the ability to know whether their foot is on the brake or accelerator pedal and be able to sufficiently modulate the amount of pressure needed on the pedal for any given driving situation. While the underlying issues with "pedal confusion" are not clear, for older adult drivers, the problem may possibly be with proprioception. It would be easy for a driver to become confused if he or she had to "look" to see where his or her foot was at to drive. Clearly, older adult drivers with sensory issues such as diabetic neuropathy would benefit from a test of leg and foot sensation and proprioception.

REFUSAL OF ASSESSMENT

Older adult drivers and their caregivers may express fear, resistance, or refusal to participate in screening or assessment of functional abilities. The three most common reasons include the older adult's belief that he or she is a good driver, the fear that an outcome may put the older adult's license at risk, and/or impaired insight of the older adult and/or caregiver. Caregivers may have conflicting priorities when trying to balance their respect for the older driver's wishes, level of risk, and the caregiver burden that cessation of driving can create, including responsibility in time and/or money for transporting the older adult to appointments and activities.

In these situations, it may be helpful to assure

the older adult that the concern and focus is on optimizing fitness to drive and not on removing the ability to drive. Health care providers, considering clinical observations and using best judgment, may decide there is cause for concern but not an immediate risk. In this case, the goal is to initiate a conversation with the older adult and ideally with the caregiver about driving risk. It will be important to discuss, with permission, the medical condition(s) of the older adult and the potential impact these can have on driving risk. The first steps may focus on increasing self-awareness and a shared understanding of driving risk for self and others. In addition, providers should ensure that the older adult understands that the goal is to work together to find solutions for him or her to continue driving, if at all possible.

It is well established that most older adults, regardless of age, intend to continue driving until they decide "I have become an unsafe driver."[31] However, older adults who live in rural communities may realize they are at risk but do not feel they have any other option. Understanding that a transition from driver to non-driver may require time to anticipate and adjust, this early focus on counseling and referral to explore alternative transportation options may allow older adults to also consider the benefits of assessment at a later time. Nevertheless, for some older adults, further evaluation now may be needed to determine fitness to drive, in the best interest of the individual and the community. In these cases, professional ethics should be used to guide the intervention plan. If the clinical team member is significantly concerned about driving risk today, he or she should work with the older adult and/or family to establish an agreement to follow a course of stopping driving now until "we better understand your situation, gain the information required through evaluation, and then determine the appropriate plan of care." This message is about safety and support, both offering the older adult and the family time to consider the consequences and prepare them for next steps. If the older adult appears to have deficits in all domains (i.e., vision, cognition, physical/motor), or primarily cognition, or caregivers report problems in complex tasks (e.g., finances, cooking, shopping), referral to an occupational therapist for an IADL risk assessment may be appropriate. Because rehabilitation services are typically covered by medical insurance plans, an occupational therapy assessment can lead to a plan and interventions that may improve function before (or in preparation for) the next option, which is the specialized comprehensive driving assessment.

In contrast, if the older adult has only physical and motor impairment, a referral to a DRS is prudent (see Chapter 5). The DRS will conduct a comprehensive driving evaluation that includes a complete clinical assessment covering the areas of vision, perception, cognition, and motor abilities, as well as an on-road assessment, if warranted. The DRS will assist the older adult and family with determining if vehicle adaptation and learning will assist in promoting driving safety.

Some older adults will absolutely refuse to consider evaluation and are intent on continuing to drive, while others may agree to the evaluation but ignore any recommendation for cessation.[32] For these individuals, insight into deficits is likely the problem. A discussion with a caregiver may offer more information as well as provide additional support for pursuing an evaluation or strategies for cessation recommendations. Actions should be guided by professional ethics, and it may be necessary to report the older adult to the appropriate driving licensing agency, the agency that is responsible to make licensing decisions and is the only party with the authority to cancel a license (see Chapters 7 and 8).

SELF-ASSESSMENT TOOLS

Many self-screening and caregiver rating tools are available to assist in building awareness of the changes associated with aging as well as the symptoms of conditions that affect driving. Following up with older drivers after use of these tools may improve their willingness to be formally assessed by the clinical team. Regardless, it is important to understand that use of self-assessment tools do not replace screening performed by professionals, because evidence is clear that self-assessment is not associated with determining fitness to drive.[33]

- *Testing Driver Safety* (see Appendix B).
- A 15-question self-rating driving questionnaire, AAA's Drivers 65 Plus: Check Your Performance Self-Rating Tool (see Appendix B).
- The Driving Decisions Workbook, developed by the University of Michigan Transportation Research Institute, is a free self-assessment tool with evidence that the workbook scores are positively correlated with on-road driving scores and several clinical tests of functional ability. Both online and print versions are available. Individualized feedback is provided to respondents based on how they answer questions. The workbook can be downloaded at http://deepblue.lib.umich.edu/bitstream/handle/2027.42/1321/94135.0001.001.pdf?sequence=2&isAllowed=y.
- The Fitness to Drive Screening Measure, developed by the University of Florida, is a free web-based tool for caregivers of older adults to identify at-risk older drivers. The user needs to have driven with the driver in the last 3 months and then rates the driver on 54 driving skills. A rating profile of the driver is available and includes a classification of the driver into one of three categories (at-risk driver, routine driver, or accomplished driver) with recommendations given as follow-up steps. Research has shown that feedback from the website correlates positively with driving risk. This tool is available at http://fitnesstodrive.phhp.ufl.edu/.
- The SAFER Driving Survey, developed at the University of Michigan Transportation Research Institute, is a web-based tool (available at http://um-saferdriving.org) that asks users about the severity of health concerns they are experiencing due to medical conditions and medications. The website 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 possible recommendations for more in-depth assessment. Research has shown that feedback from the website 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.[34]

CLINICAL TEAM ASSESSMENT TOOLS

Current assessments used in fitness-to-drive evaluations range from simple paper and pencil tools that are performed by general clinicians in their offices to complex assessments that should only be performed in the scope of practice of a clinical neuropsychologist or DRS (e.g., on-road assessment). In contrast, the Clinical Assessment of Driving Related Skills (CADReS) is offered as a toolbox of practical, office-based functional assessment tools in the major areas of vision, cognition, and motor/sensory function related to driving for the clinical team member who is screening or assessing an older driver. Clinical team members should choose from tools in each

area that best address their patient's needs and document their encounters.

In the case of cognitive screenings, it is not always necessary to do all the tests. Depending on the outcome of the less challenging assessments, it may be unnecessary to progress further. Note: The justification of assessment tool selection and scoring is addressed in Chapter 4.

General

■ **Driving history:** A brief driving history can be useful as an initial screen to identify the older adult's perception of his or her driving, as well as that of a caregiver if available. Recent traffic violations, crashes (including unreported), or near misses are all red flags for concern (see Chapter 2). The Driving Habits Questionnaire is available[35] but is lengthy. A modified version is available in Appendix C.

■ **IADLs questionnaire:** A checklist of other IADLs can also be used as an initial screen to identify if the older adult is having difficulties with other complex tasks of daily living. Driving uses the same underlying functions (e.g., visual processing, executive functioning, memory, processing speed) as other IADLs, similar to those for financial management, shopping, or cooking. If the older adult is having difficulty with any IADL tasks, further evaluation is warranted. A report from a caregiver may also be helpful when the older adult appears to have cognitive impairment. An example is the AD8TM Dementia Screening Interview, an eight-item caregiver questionnaire that differentiates between dementia and normal aging (copyrighted by Washington University) and has preliminary data that suggests it is useful in combination with other tools to determine fitness to drive10 (https://knightadrc.wustl.edu/CDR/ad8.htm).

■ **Medication review:** Certain medications clearly affect driving, and new or changing doses may affect assessment findings, perhaps triggering red flags that are temporary.

Vision

■ **Visual acuity:** Measured by vision charts, visual acuity should be measured because it is the legal criteria for most state licensing agencies. The Snellen chart is described below and provided in Appendix C.

■ **Visual fields:** Using a uniform manner of confrontation testing as described below, visual fields can be assessed.

■ **Contrast sensitivity:** Many charts are commercially available (e.g., Pelli-Robson contrast sensitivity chart) to test the ability to perceive objects in contrast to the environment.

Cognitive

■ **Montreal Cognitive Assessment[36] (MoCA** [https://www.mocatest.org/]**):** The MoCA is a brief cognitive test designed to assist health care professionals in detecting mild cognitive impairment. Although it can be administered by anyone, results should be interpreted only by individuals with expertise in the cognitive field.[37] It rates cognitive performance, is available in multiple languages, and has been validated for adults 55 to 85 years old. It tests memory, attention, language, abstract, recall, orientation, as well as visuospatial skills by incorporating a shorter Trails B and a clock-making task.

■ **Trails A & B:** This test of general cognitive function also specifically assesses working memory, visual processing, visuospatial skills, selective and divided attention, and psychomotor coordination. Numerous studies have demonstrated an association between poor performance on the Trail-Making Test Part A and B and poor driving performance[4,38] (see below for directions and form).

Neuropsychologists often recommend giving the Trails A test (connecting just numbers) before giving the Trails B test. The rationale is two-fold: The Trails A provides an appropriate warm-up to Trails B and allows the older adult some practice on a simpler concept, and, in many of the driving studies that validated Trails B, the Trails A was given first.

■ **Clock-Drawing Test:** This test may assess 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.[39]

■ **Maze test:** There are several versions of maze testing, including online versions. Depending on the type of test, it assesses visual perception, visuospatial skills, abstract thinking, and executive skills. The Snellgrove maze[40] is a one-page cognitive screen for driving competence that was validated with older adults with mild cognitive impairment or early dementia.

Motor/Sensory

■ **Rapid Pace Walk and Get Up and Go:** These tests are measures of lower limb strength, endurance, range of motion, and balance. The Rapid Pace Walk has been linked with driving outcomes,[41,42] whereas Get Up and Go[43] has been more closely linked with falls and future disability and long-term care placement. Because falls have been associated with poor driving outcomes,[19] either of these tests are appropriate measures for assessing overall motor abilities. For directions, see below.

■ **Range of Motion:** Performing a functional range of motion test is important for examining if and how the motor vehicle can be adapted to meet limitations of the older adult. Mirrors, vehicular technology (e.g., back up cameras, blind side warnings) and education/training can accommodate limitations of the neck. Limitations in any of the extremities can be accommodated by adaptive equipment recommended by a DRS. For directions for a functional range of motion test, see below.

Although anxious, **Mrs. Alvarez** *clearly wants to keep driving. There may be some concern with her confidence, potential change in her medical condition, and effect of medications, because she had an unsteady gait as she walked in the office. You decide to do the CADReS.*

"Mrs. Alvarez, I am going to ask you to do a few simple tests that can measure functional abilities needed for safe driving, such as walking down the hall while I time you, and a couple of paper and pencil tests. These assessments will help us find out if there are any areas we need to look into further. Based on the results of the tests and your health condition, we will do our best to treat or reverse any problems we find."

After scoring Mrs. Alvarez's performance on the CADReS toolbox assessments, you discuss the results with her. You assure her that she scored well on the vision and cognitive tests, but performance on the motor was impaired (Rapid Pace Walk = 11 seconds) and you noticed her unsteady gait as she walked in. When asked about falls, she admitted that she has fallen in her home.

THE EVOLUTION OF COMPUTER-BASED TOOLS

Two computer-based assessment tools are commercially available. The cost of these tools is presently not covered by most insurance providers.

In general, more research is needed on these computer-based assessments before they can be used as tools for making licensing decisions. The use of interactive driving simulators is also being studied, with emerging evidence supportive for their use as a potential assessment and intervention tool.[44,45]

■ **Useful Field of View:** This is the most widely studied instrument for detection of impairment in processing speed, divided attention, and selective attention that has been moderately correlated with crash risk in older adult drivers. The strongest evidence is for the Subtest 2, which tests processing speed,[41,42,46] but not all studies supported the predictive validity of this instrument.[4,10,47] This assessment tool is available for purchase (information is available on the Visual Awareness website (https://www.visualawareness.com/what-is-ufov/).[48] Cost, time, and ability to bill, as well as limited studies in a primary care setting, might be potential barriers to use.

■ **DriveABLE:** This assessment is only of cognitive abilities for driving; it is computer-based and electronically scored (available at https://www.driveable.com/). Based on the performance of the older adult, results are generated from a computer algorithm that returns a score between 1 and 99 and reflects the "Predicted Probability of Failing an On-Road Evaluation," with 1 being least likely and 99 being most likely to fail. The computer program designates upper and lower areas of risk. Although the developers of the program maintain the computer presentation of the tasks enables precision measurements and objectivity and removes testing bias, there is contradictory research evidence to support the claims of predicting driving risk accurately.[49] In addition, DriveABLE's approach does not provide the clinician with information that can be used to identify clinical solutions for potential problems.

ASSESSMENT TOOL PERFORMANCE INSTRUCTIONS

Snellen eye 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.

This test is best performed in a hallway with good lighting. Floor tape can be used to mark a distance of 10 or 20 feet (depending on the chart size).

With the chart hanging on a wall, the older adult is instructed to stand 10 or 20 feet away. Wearing his or her usual glasses or contact lenses, the individual reads the smallest line possible with both eyes open. Visual acuity is based on the lowest full row that he or she successfully reads, and the process is repeated for each eye individually. However, if the best the individual can see in either eye is 20/40, then his or her acuity is considered to be 20/40 in both eyes.

Far visual acuity can also be measured using another chart per the clinician's preference, such as the Snellen chart for a 10-foot distance or the Sloan low-vision letter chart for 6 meters (20 feet).[50]

Near visual acuity can be tested with commercially available charts and should be considered whenever an older adult complains of difficulty seeing/reading maps or gauges and controls within the vehicle. This can be checked 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.[51] A trend in the field of eye care has been to use a newer chart called the Early Treatment Diabetic Retinopathy

Study (ETDRS) that in some studies of eye diseases appears to be more accurate.[52] The ETDRS chart improves on the Snellen test by having a similar number of letters per line and standard spacing between the letters.

Visual Fields

The examiner sits or stands 3 feet in front of the patient, at the individual's eye level. The patient is asked to close his or her right eye, while the examiner closes his or 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 functional limits, if the examiner can see the fingers, then the patient should be able to see them unless he or 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.

Rapid Pace Walk

A 10-foot path is marked on the floor with tape. The examiner should first demonstrate the walk and then ask the individual to walk the 10-foot path, turn around, and walk back to the starting point. Then the test begins. The individual is asked to walk the same path as quickly as possible. If the older adult normally walks with a walker or cane, he or she may use it during this test. The total walking distance is 20 feet.

The examiner begins timing the individual when he or 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 older adult to walk 10 feet and back.[42] In addition, the examiner should indicate on the scoring sheet whether the older adult used a walker or cane. Scores longer than 9 seconds are associated with an increased risk of at-fault motor vehicle tasks.[38]

Get Up and Go

Instructions[43]

Ask the patient to perform the following series of maneuvers.

1. Sit comfortably in a straight-backed chair.
2. Rise from the chair.
3. Stand still momentarily.
4. Walk a short distance (approximately 10 feet/3 meters).
5. Turn around.
6. Walk back to the chair.
7. Turn around.
8. Sit down in the chair.

Scoring

Observe the patient's movements for any deviation from a confident, normal performance. Use the following scale.

1 = Normal

2 = Very slightly abnormal

3 = Mildly abnormal

4 = Moderately abnormal

5 = Severely abnormal

"Normal" indicates that the patient gave no evidence of being at risk of falling during the test or at any other time. "Severely abnormal" indicates

that the patient appeared at risk of falling during the test. Intermediate grades reflect the presence of any of the following as indicators of the possibility of falling: undue slowness, hesitancy, abnormal movements of the trunk or upper limbs, staggering, or stumbling.

A patient with a score of 3 or more on the Get Up and Go Test is at risk of falling.

Functional Strength and Range of Motion

To test the functional range of motion for an older adult, ask him or her to perform the below listed 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 toward your head"

The test is scored by evaluating the motion as either within functional limits or not within functional limits. The latter means that range of motion is done with excessive hesitation, pain, or very limited range of motion.

Maze Test[40]

The Maze Test was developed as a pencil and paper test of attention, visuoconstructional ability, and executive functions of planning and foresight. Participants complete a simple demonstration (or practice) maze first to establish the rule set, and then complete the Maze Task. Performance is measured in time (in seconds), using a stop watch, and the total number of errors. Errors are determined by the number of times a participant enters a dead end or fails to stay in the lines. Time to administer is 1–4 minutes. The Maze Test is in Appendix C; it should be printed on an 8 × 11" paper with the Maze Test at least 5.5" square and the practice 4.5".

To administer the test, the ***practice maze*** is placed in front of the participant in the correct orientation. The participant is provided with a pen, and the administrator says:

I want you to find the route from the start to the exit of the maze. Put your pen here at the start (point to the start). Here is the exit of the maze (point to the exit). Draw a line representing the route from the start to the exit of the maze. The rules are that you are not to run into dead ends (point to a dead end) or cross solid lines (point to a solid line). Go.

The instructions are repeated, if required, and any rule-breaks should be corrected. The participant is permitted to lift the pen from the page. When the participant has attempted the maze, record whether the task was completed (yes or no), and the number of times the participant required repeating or reminding of the instructions.

Next the Maze Task is placed in front of the participant in the correct orientation. The participant is provided with a pen, and the administrator says:

"Good, now that I know you understand the task, I'm going to time you as you find the route from the start to the exit of the maze. Put your pen here at the start (point to the start). Here is the exit (point to the exit). Draw a line representing the route from the start to the exit of the maze. The same rules apply. Don't run into any dead ends (point to a dead end), or cross any lines (point to a solid line). Are your ready? I'm starting the timer now. Go!"

The instructions are not repeated and rule breaks are not corrected. If questions are asked, the response should be: I can't give you any more help. Do the task as best you can. Stop the timer immediately upon the participant's completion of the task. There is a limit of 3 minutes for the Maze Task. If the maze has not been completed in this time, discontinue. The recording of the test includes whether the Maze Task was completed (yes or no); the time in seconds to complete the Maze Task, and the number of errors (entry into a dead end, and/or failure to stay within the lane).

Montreal Cognitive Assessment (MoCA)[36]

The MoCA is designed as a rapid screening tool that measures attention and concentration, executive functions, memory, language, visuoconstructional skills, conceptual thinking, calculations, and orientation. Time to administer is about 10 minutes.

The highest possible score is 30, with a score of 26 or above considered normal. One point should be added for individuals with 12 years or fewer of formal education. A score of 18 or less should raise concerns about driving safety.

The original version and directions are in Appendix C.

Trail-Making Test for Screening, Part A and B

This test of general cognitive function specifically assesses working memory, visual processing, visuospatial skills, selective and divided attention, processing speed, and psychomotor coordination. In addition, numerous studies have demonstrated an association between poor performance on the Trail-Making Tests and poor driving performance.[4,38,42]

Instructions for Part A. Using the sample of A, the administrator says: *"There are numbers in circles on this page. Please take the pencil and draw a line from one number to the next, in order. Start at 1 [point to the number], then go to 2 [point], then go to 3 [point], and so on. Please try not to lift the pen as you move from one number to the next. Work as quickly and accurately as you can."* If there is an error: *"You were at number 2. What is the next number?" Wait for the individual's response and say, "Please start here and continue."*

Test A: If Sample A is completed correctly, the administrator repeats the above instructions for Trails A. Start timing as soon as the instruction is given to begin. Stop timing when the Trail is completed, or when maximum time is reached (150 seconds = 2.5 min).

Instructions for Part B. Using the sample of B, the administrator says: *"There are numbers and letters in circles on this page. Please take the pen and draw a line, alternating in order between the numbers and letters. Start at number 1 [point], then go to the first letter, A [point], then go to the next number, 2 [point], and then the next letter, B [point], and so on. Please try not to lift the pen as you move from one number or letter to the next. Work as quickly and accurately as you can."* If there is an error: *"You were at number 2. What is the next letter?"* Wait for the individual's response and say, *"Please start here and continue."*

If Sample B is completed correctly, the administrator repeats the above instructions for Trails B. Start timing as soon as the instruction is given to begin. Stop timing when the Trail is completed, or when maximum time is reached (300 seconds = 5 min).

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 3–4 minutes to administer, but should be stopped after 5 minutes.

Clock-Drawing Test

In this form of the clock-drawing test, the examiner gives the individual 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 individual 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 CADReS score sheet (see Appendix C for score sheet).

Test Sequence

Although these tests may be administered in any order, the following sequence is recommended: (Note that the MoCA incorporates elements of the Trail-Making Part B and Clock Drawing).

1. Snellen E Chart
2. Visual fields by confrontation testing
3. Rapid Pace Walk and/or Get Up and Go
4. Functional range of motion
5. Maze Test
6. Montreal Cognitive Assessment (MoCA)
7. Trail-Making Test, Part A and then Part B
8. Clock-Drawing Test

For a discussion of scoring these tests and recommended interventions based on performance, see Chapter 4.

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CHAPTER 4 CLINICAL INTERVENTIONS

KEY POINTS

- The goal of clinical evaluation is to identify, correct, and/or stabilize any functional deficits that may impair an older adult's driving performance and to consider referral to a driver rehabilitation specialist (DRS), if appropriate.
- Screening for visual field cuts is important, because most older adults with visual field loss are unaware of the deficit until it becomes quite significant.
- Failure to pass any measure of cognition in the Clinical Assessment of Driver-Related Skills (CADreS) toolbox should elicit a referral to provide opportunities for older adults to optimize cognitive function and perhaps explore their potential to continue to drive safely. Local resources will vary and may include occupational therapists, speech-language pathologists, neuropsychologists, driving rehabilitation specialists, or other medical specialists.
- Individuals who have issues only with motor and/or somatosensory areas should be referred to a DRS to take advantage of advancements in technology and possible adaptive equipment for the vehicle.

Despite encouragement, **Mr. Phillips** *(introduced in previous chapters) hesitates to go through the assessment tools you recommend from the Clinical Assessment of Driver-Related Skills (CADReS) toolbox. He states, "I don't see the need for it." You discuss your concerns for his safety and counsel him with the following resources from Appendix B:*

- *NHTSA's Driving Safely While Aging Gracefully*
- *AAA's questionnaire Drivers 65 Plus: Check Your Performance Self-Rating Tool*
- *Testing Driver Safety*
- *Safety Tips for Older Drivers*

Mr. Phillips agrees to allow his son to observe his driving, and you advise the son on how to access the online Fitness-to-Drive screening measure (http://ftds.phhp.ufl.edu/) as well as NHTSA's How to Understand & Influence Older Drivers (https://www.nhtsa.gov/older-drivers/how-understand-and-influence-older-drivers).

You document all of this in Mr. Phillips' record and schedule a follow-up appointment. At Mr. Phillips' next visit, you ask him if he has had a chance to review the materials provided on his last visit. He admits that he had another close call while driving, and his son states he observed several driving errors, including turning left in front of an oncoming vehicle. These events have motivated Mr. Phillips to complete the self-assessment. He believes the self-assessment recommendation for further evaluation is a reasonable idea and is now willing to be assessed.

From the CADReS toolbox, Mr. Phillips takes 13 seconds to perform the Rapid Pace Walk. His visual acuity is 20/50 on the right and 20/70 on the left. He has limited range of motion on neck rotation, but his 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 test is scored as "normal" for all seven criteria.

Now that Mr. Phillips has been assessed, what does his performance indicate? This chapter provides information to support interpretation of CADReS assessment outcomes. However, recommendations stated here are subject to individual state reporting laws and state licensing agency requirements. Links to individual state requirements are provided in Chapter 8. Examples of interventions that may help manage and treat any functional deficits identified through CADReS are also provided.

Remember that the goal of clinical evaluation is to identify, correct, and/or stabilize any functional deficits that may impair an older adult's driving performance and to refer to a DRS, if appropriate (see Chapter 5). Contributing medical conditions and potential medication effects as discussed in the American Geriatrics Society Beers Criteria®[1] are discussed further in Chapter 9.

THE CLINICAL ASSESSMENT OF DRIVER-RELATED SKILLS (CADRES)

Motor and sensory ability, vision, and cognition are all important for driving. However, they may not be equally important for a particular older adult. Depending on the older adult's medical conditions, one area of function may require greater attention than another. Depending on the assessment outcome in each area, the outcome action may be different.

Vision

Screening for visual field cuts is important, because most older adults with visual field loss are unaware of the deficit until it becomes quite significant, such as in stroke, glaucoma, or macular degeneration. In most cases, referral to an ophthalmologist is the best outcome if there is any cause for concern.

Contrast sensitivity is a good screen for all older adults, followed by providing appropriate education and information to the older adult driver and caregiver on how to compensate for a deficit. A problem solely with contrast sensitivity does not merit a report to the state licensing agency.

Visual Acuity: Although many states currently require far visual acuity of 20/40 for an unrestricted license, there is little 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.[2,3] However, some studies have found that states that require visual testing for license renewal for older adults have lower crash rates.[4]

General recommendations on visual acuity and driving are given below, but note that they are subject to each state's licensing requirements.

For corrected visual acuity worse than 20/40 (i.e., more impaired), the clinical team member should:

- Refer to a vision specialist (ophthalmologist or optometrist) for diagnosis and treatment (if possible) of the underlying cause of vision loss. The older adult should obtain and use the appropriate glasses or contact lenses. If the older adult is not currently under the care of a specialist, referral is recommended.
- Recommend that the older adult 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). Although the evidenced-based literature on restriction is equivocal, we still believe this to be good practice.
- Be aware that the older adult may require more frequent (e.g., yearly) assessment of visual acuity to detect further visual decline caused by chronic, progressive diseases such as age-related macular degeneration, diabetic retinopathy and glaucoma.

For corrected visual acuity worse than 20/100 (i.e., more impaired), the clinical team member should:

- Follow the recommendations above.
- Recommend that the older adult not drive unless safe driving ability can be demonstrated in an on-road assessment performed by a DRS who has low vision expertise, where permitted. Check to see if low-vision driving rehabilitation is available in your area.

Visual Fields and Contrast Sensitivity: Research shows that visual field loss and impaired contrast sensitivity can significantly affect driving safety. Patients with worse central vision loss and impaired contrast sensitivity from age-related macular degeneration tended to be older and were more likely to have ceased driving.[5] In other studies, however, most drivers with moderate binocular visual field loss displayed acceptable on-road driving skills.[6] Recently, in studies focused on a more homogeneous group of older adults with a specific condition known to impair visual fields (e.g., glaucoma), increased crash risk was correlated with moderate to severe field defects.[7,8]

Although an adequate visual field is important for safe driving, there is no conclusive evidence to define "adequate." Most likely, this varies widely from person to person and may depend on the presence of other comorbidities. 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.[9] Because most older adults with visual field loss are unaware of the deficit until it becomes quite significant, screening for visual field cuts is important, especially if their medical condition warrants examination (e.g., stroke, macular degeneration).

General recommendations on visual field and driving are stated below. Physicians and other clinical team members should be aware of and adhere to their states' specific visual field requirements.

For visual field defects noted on confrontation testing, the clinical team member should:

- Refer to a vision specialist (ophthalmologist or optometrist) for diagnosis and treatment (if possible) of the underlying cause of vision loss. In addition, automated visual field testing may help define the extent of the defect; ophthalmologists have specialized instruments for measuring visual fields.
- For older adults with a binocular visual field of questionable adequacy (as deemed by clinical judgment), strongly recommend an comprehensive driving evaluation performed by a DRS. Through driving rehabilitation, the older adult may learn how to compensate for decreased visual fields. In addition, the DRS may prescribe equipment such as enlarged side- and rear-view mirrors and train the older adult in their use.
- Consider contrast sensitivity testing, which is a good screen for all older adults, followed by providing education and information to both the older adult driver and caregivers on how to compensate for a deficit by minimizing low-light driving conditions (at night, in bad weather). Vision specialist referral is desirable, but a problem solely with contrast sensitivity does not merit a report to the state licensing board.

Visual fields may need to be retested in the future for visual field defects caused by chronic, progressive diseases.

Cognition

Screening for cognitive deficits is essential, along with careful interpretation of the findings. There is clear evidence that the Mini–Mental State Exam is not related to outcomes in crashes or driving abilities.[10,11] However, the tools recommended in the CADreS have been particularly chosen to provide reasonable information in the office-based setting on skills known to be related to driving. Any

cognitive screen that clearly demonstrates the older adult has moderate or severe cognitive impairment is sufficient evidence for a provider to recommend driving cessation.[12] No further referral is necessary for evaluation of driving performance. A referral to a general practice occupational therapist for further evaluation of instrumental activities of daily living (IADLs) or to a neuropsychologist for appropriate testing and diagnosis is indicated and may be an important resource for improving or extending quality of life and safe mobility.

For older adults with mild cognitive impairment or early dementia (with or without motor impairment), more information should be obtained to explore the reversibility of the cognitive impairment, the etiology, the potential remaining abilities, and strategies for compensation by having a thorough evaluation for dementia as below. Failure to pass any measure of cognition in the Clinical Assessment of Driver-Related Skills (CADreS) toolbox should elicit a referral to provide opportunities for older adults to optimize cognitive function and perhaps explore their potential to continue to drive safely. Local resources will vary and may include occupational therapists, speech-language pathologists, neuropsychologists, driving rehabilitation specialists, or other medical specialists. Although the following cognitive tests are scored separately, interventions are recommended if the older adult reaches any of the designated cut-off values described below. Potential interventions will vary depending on the domain of cognitive impairment demonstrated (impulsiveness, judgment, memory, visuospatial, etc.).

Montreal Cognitive Assessment (MoCA): The MoCA was designed as a rapid screening instrument for mild cognitive dysfunction. It assesses different cognitive domains: attention and concentration, executive functions, memory, language, visuoconstructional skills, conceptual thinking, calculations, and orientation. Time to administer the MoCA is approximately 10 minutes. The total possible score is 30 points; a score of 26 or above is considered normal. One point is added for any individual who has 12 years or fewer of formal education.[13] In individuals with cognitive impairment, there was a significant relationship between MoCA score and on-road outcome. Specifically, an individual was 1.36 times as likely to fail the road test with each 1-point decrease in MoCA score, with a score of 18 or less of concern regarding driving safety.[14] The MoCA may be used, reproduced, and distributed without permission by health professionals, and it is available in multiple languages online.

Trail-Making Test, Part B (TMT-B): A time for completion of >3 minutes (>180 seconds) indicates a need for intervention,15 such as a review of causes for the abnormal result (e.g., dementia, sedating medication, depression), and/or referral to a DRS. Numerous studies have demonstrated an association between performance on the TMT-B and cognitive function and/or driving performance.[16] A study of 83 drivers with a mean age of 60.8 years referred specifically for evaluation of fitness to drive showed that on-road driving performance as evaluated by a DRS was predicted 78% of the time by the drivers' TMT-B performance.[17] Further data from the Maryland Pilot Older Driver Study[18] 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 have been found to correlate significantly with traditional cognitive measures and in some studies discriminate healthy individuals from those with dementia.[19] Of all the measures

that have been correlated with impaired driving performance in older adults with dementia, tests of visuospatial skill ability have had the highest predictive value.[20] Several versions of the clock-drawing test are available, each varying slightly in the method of administration and scoring.[21] The Freund Clock Scoring is based on seven "principal components" (as outlined on the CADReS Score Sheet in Appendix C) that were derived by analyzing the clock drawings of 88 drivers ≥65 years of age against their performance on a driving simulator.[22] Errors on these principal components correlated significantly with specific hazardous driving errors, signaling the need for formal driving evaluation.

Maze Test: The Snellgrove Maze Test measures only those skills required for safe driving: attention, visuoconstructional skills, and executive functions of planning and foresight. In a sample of older adults with mild cognitive impairment or early dementia, the Maze Test time and error scores predicted on-road driving competence with high sensitivity, specificity, and overall accuracy.[23, 24]

Again, these tests should not be the sole determinant as to whether an older adult should drive.[25] However, impairments on these tests are associated with increased risk, and referral for further evaluation, such as for IADL evaluation or 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 use a battery of tests such as those currently being evaluated as part of multicenter prospective cohort studies such as CANDRIVE II/Ozcandrive and LongROAD.[26, 27]

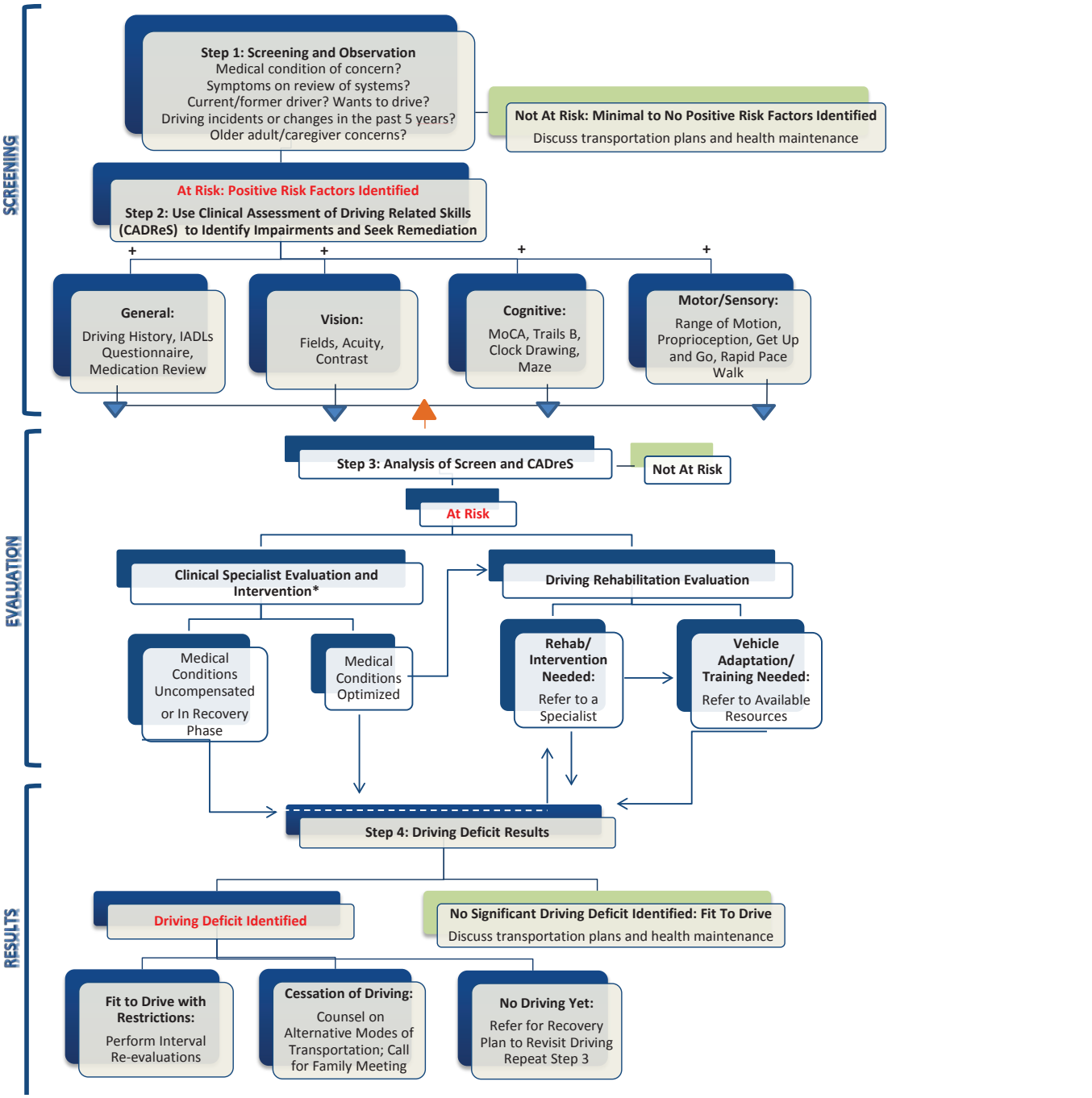
If an older adult's performance warrants intervention, the clinician should:

- Gather (or refer for) more information to include detailed history and examination of cognitive and functional abilities, as needed.[28]
- Identify or interview a reliable informant (e.g., family member or caregiver) who can assist with the evaluation.
- Work with the older adult's clinical team for further diagnostic evaluation aimed at identifying the cause of the cognitive decline.
- Evaluate for reversible causes of cognitive decline. Based on history, examination, and cognitive testing, order laboratory tests as needed, including CBC for anemia or infection, comprehensive metabolic profile for electrolyte imbalance and renal function, urinalysis for urinary tract infection, finger stick for blood sugar, pulse oximetry for hypoxia, thyroid-stimulating hormone (TSH) for hypothyroidism, liver function tests, vitamin B12 and folate for vitamin deficiency, and based on prior probability, noncontrast CT or MRI scan.
- Screen for depression and treat if positive.[29]
- Review the older adult's medication regimen and assess for potential adverse effects of the medications on cognition, and ask the older adult and caregivers about the onset of cognitive decline as related to new medications or dosage changes. Older adults may be unaware of the potential effects of medications 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 older adult have a complete evaluation to identify the underlying cause(s) and receive proper treatment.
- If needed, refer the older adult to a neurologist, psychiatrist, or neuropsychologist for additional diagnosis or treatment as needed.
- Recommend a comprehensive driving evaluation performed by a DRS to assess the older adult's performance in the actual driving task. An initial comprehensive on-road assessment with retesting at regular intervals is particularly useful for those with progressive dementing illnesses.

■ Strongly recommend that the older adult begin exploring alternative forms of transportation now, and encourage him or her to involve caregivers in these discussions.

See the Plan for Older Drivers' Safety (PODS) diagram below.

Plan for Older Drivers' Safety (PODS)



IADLs Instrumental Activities of Daily Living
MoCA Montreal Cognitive Assessment
▲ Pathway step may be repeated if progressive assessment necessary
* Clinical specialists may include medicine, nursing, pharmacy, social work, occupational or physical therapy, psychology and others, depending on the clinical setting
---- Time Lapse

Motor Ability

If the only problems are with motor and/or somatosensory areas, these individuals should be referred to a DRS to take advantage of advancements in technology (see Chapter 5). For older adult drivers who are cognitively intact, learning to compensate for motor and/or somatosensory deficits justifies getting expert advice on strategies, available vehicle adaptations or devices of the type best suited for individual issues, and the training to use them for continued driving. Data from the LongROADS study indicates that women were more likely to have a musculoskeletal diagnosis and twice as likely in the past 12 months to reduce driving as a result. The highest rates of driving reduction were due to joint replacements, while the greatest number were due to joint pain and swelling and arthritis.[30] Although the following tests are scored separately, interventions are recommended if the older adult shows significant difficulty as described below on any of the individual tests.

Rapid Pace Walk or the Get Up and Go: Because each of these measure overall lower extremity strength, coordination, and proprioception in a functional task, they also serve to screen how well an older adult can function despite individual motor or range of motion deficits. Older adults with a history of falls have been noted to be at increased risk of motor vehicle crashes.[31] A Rapid Pace Walk score >9 seconds should trigger a referral to physical therapy for evaluation and treatment, as well as further evaluation by the clinical team for potential causes and treatments. A score of ≥3 on the Get Up and Go test should similarly be considered an indication for referral and treatment. If functional disability is quite severe, it may be wise for the older adult to refrain from driving until such time as their condition can be optimized or adaptive devices (e.g., hand controls) can be installed and the older adult trained in their use.

The clinical team member should also be aware that the amount of strength required for safe driving may depend on the type of vehicle being driven. For example, greater strength may be required to safely drive older cars that do not have power steering or large vehicles (e.g., an RV, which is not uncommon for retirees).

Functional Range of Motion: If the older adult's range of motion is not within normal limits (i.e., range of motion is very limited, or good only with excessive hesitation or pain), this may signal the need for intervention. The inability to recognize an object presented directly behind an older adult (e.g., impaired cervical range of motion) has been correlated with increased risk of a motor vehicle crash.[18]

Scoring for range of motion is rated as normal versus impaired (rather than recording the actual range) for several reasons:

- Most clinicians are neither trained in use of goniometers nor have the devices in the office setting.
- Range-of-motion requirements vary with automobile design, and thus it is difficult to specify exact requirements. Vehicle adaptation to compensate for limited range may also be possible.
- The impact of limited range of motion on driving safety also depends on other functions (as discussed in the visual fields section).
- As with all the other tests from the CADReS toolbox, an older adult's poor performance should be a stimulus for optimization of function rather than for immediate driving restrictions.

If an older adult's performance on this test is not within normal limits, the clinician should elicit the reason: Do these movements cause muscle or joint pain? Does the older adult complain of tight muscles or stiff joints? Do these movements cause a loss of balance? Knowing the answers to these questions

will help in management of the older adult's physical limitations.

If an older adult's performance indicates a need for intervention, the clinical team member should:

■ Encourage the older adult to drive a vehicle with power steering and automatic transmission, if he or she does not already do so.

■ Recommend that the older adult maintain or begin a consistent regimen of general physical activity, including cardiovascular exercise, strengthening exercises, and stretching. Excellent resources are available through the Go4Life program sponsored by the National Institute on Aging (https://go4life.nia.nih.gov/).

■ Refer the older adult to a physical therapist as needed for training and exercises to improve strength and/or range of motion, or to an occupational therapist if impairment is affecting daily tasks.

■ Check with the older adult's primary care provider on providing effective pain control if pain is limiting range of motion or mobility. This may include prescribing analgesics or medications that treat an underlying disorder, or changing the time that the older adult takes pain medications so that relief is achieved before driving. Note that while many analgesics may improve driving through symptom relief, some (including narcotics and skeletal muscle relaxants) have the potential to impair driving ability and may adversely affect driving performance more than the instigating symptoms. These medications should be avoided, if possible, or prescribed at the lowest effective dose. Older adults should be advised to refrain from driving when first taking these medications until they know how the medications are tolerated. Non-sedating and non-pharmacologic strategies for pain management are preferred whenever possible.

■ Refer the older adult to a specialist for management of any joint disease, podiatry issues, or neuromuscular problems. Individuals who have had a stroke may have residual deficits that interfere with their handling of car controls and should also be referred.

■ Recommend a comprehensive driving assessment (including an on-road assessment) performed by a DRS. A comprehensive on-road assessment is particularly useful for assessing the impact of physical fatigue, flexibility, and pain on the older adult'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 older adult in their use.

Mrs. Alvarez's *medications include metformin, acetaminophen, gabapentin, hydrochlorothiazide, lisinopril, zolpidem, and aspirin. Considering Mrs. Alvarez's fall risk and medical history of peripheral neuropathy, you discuss the need for further evaluation and treatment. She agrees that she can try to wean off of zolpidem and reduce the dose of gabapentin to improve her stability and speed of response. You recommend a referral to physical therapy for improving balance and fall prevention and a referral to a DRS for evaluation and potential adaptive equipment.*

"Mrs. Alvarez, I am going to recommend that you work with a physical therapist for a full evaluation of your neuropathy and teach you some exercises to improve your balance to prevent future falls. However, I'm also concerned about driving. It may be that you have lost too much feeling in your feet to be able to tell which pedal you have your foot on and could mistake the gas for the brake and have a crash."

NEXT COURSE OF ACTION

After administering CADReS assessment tools, three courses of action are possible (see also Plan for Older Drivers' Safety, Chapter 1):

- If the older adult performs well in all three areas from the CADReS toolbox, he or she can be advised that there are no medical contraindications to safe driving and offered counseling regarding health maintenance and future transportation planning. Older adults should be counseled on health maintenance by providing information such as the Ten Tips for Aging Well and Tips for Safe Driving handouts, and the clinician should periodically follow-up on the older adult'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 older adult and/or caregiver, further evaluation may be warranted despite a normal score.
- If the older adult performs poorly on any area of CADReS, but on clinical specialist evaluation the causes of poor performance are medically correctable, medical treatment and intervention should be pursued until the older adult's function has been optimized. The older adult may need to be counseled to limit driving as treatment proceeds. The level of improvement should be assessed with repeat administration of CADReS tools. Once the older adult performs well in all areas, he or she should be counseled on health maintenance (as above).
- If the poor performance on the CADReS toolkit cannot be medically corrected, or if no further potential for improvement with medical interventions is anticipated, the older adult should be referred to a DRS. The older driver may need to be counseled to restrict driving until evaluation by a DRS is accomplished.

The CADReS toolbox is useful when supporting an in-office assessment, but it does not evaluate the older adult's performance in the actual driving task. Results, even if abnormal, are not sufficient to recommend driving cessation, except for vision and moderate/severe cognitive impairment. For all other cases, comprehensive driving evaluation with an on-road assessment performed by a DRS is indicated. The DRS can more specifically determine the older adult's level of driving safety and potentially correct his or her functional impairments, if possible, through adaptive techniques or devices (see Chapter 5 and Appendix C).

State licensing policies are evolving, with each state establishing guidelines for issuing and revoking driver's licenses. Health care providers must be aware of the guidelines in their state and ideally also other states in which the older adult drives (see Chapter 8). The first responsibility, regardless of the state processes, is the identification of drivers who exhibit a level of impairment potentially incompatible with continued driving. For those individuals, the message must be clear that driving must stop until further information is obtained. If the concern is medical (e.g., seizures, confusion), the individual must not drive until medical reports meet the state requirements for continued driving. If function on the road is in question, a comprehensive driving evaluation by a DRS provides the necessary evaluation data and intervention plan.

The recommendation for further evaluation is typically the result of a series of steps (as described in this chapter). Therefore, the driver should be informed both verbally and in writing that declining recommendations for further evaluation may put the patient and/or the public at risk of a crash or injury and could possibly start the state process for license revocation, including potential reporting to the state's Medical Review Board.

There will be cases when, in his or her best ethical judgment, the health care provider believes that the risk is very high and that the older adult will continue to drive despite the recommendation to stop driving. Clinicians must follow state laws for reporting to state licensing agencies and program/facility guidelines for informing the older driver and/or caregivers. Depending on the state's reporting laws, clinicians may be legally responsible for reporting "unsafe" drivers to the state licensing agency (for descriptions of legal and ethical responsibilities, see Chapters 7 and 8). In terms of best practice, the older adult should also be informed about this report.

THE COPILOT PHENOMENON

Copiloting refers to a situation in which an individual drives with the assistance of a passenger who provides navigational directions as well as instructions on how to perform the driving task itself. Older adults with cognitive impairment may rely on passengers to tell them where to drive and how to respond to driving situations, whereas older adults with vision deficits may ask passengers to alert them to traffic signs and signals.

The use of copilots is not rare. In a survey of 534 community-dwelling current drivers aged 65 years and older (without dementia or Parkinson disease), about 24% self-reported regularly using passenger guidance.[32] Older adults should be advised to not continue driving unless they are capable of driving safely without the use of a copilot for coaching on how to handle driving situations. 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 himself or herself in danger but also the copilot, other passengers, and other road users. 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.[32]

Older adults who are not safe to drive should be recommended to stop driving, regardless of their need or use of a copilot. Copilots should not be recommended to unsafe drivers as a means to continue driving. Instead, efforts should focus on helping older adults find alternative transportation for themselves and others who may depend on them.

This is not to be confused with safe drivers who may feel more comfortable driving with a passenger who provides company and helps only with navigation directions. Although using a passenger to assist as a navigator is an acceptable practice, use of a copilot to provide instruction on how to perform the driving task itself is not.

NAVIGATION DEVICES/GLOBAL POSITIONING SYSTEM (GPS)

A recent NHTSA funded study studied 1) if GPS improved older drivers' safety on unfamiliar routes, 2) how performance compares between drivers who are familiar and unfamiliar with GPS, and 3) how training with GPS impacted performance.33 Results demonstrated that when traveling in unfamiliar areas, all drivers made fewer driving errors when using GPS compared with using paper directions, although those who were familiar with GPS did better. Results also showed that drivers in their 60s exhibited safer behaviors than those in their 70s. When entering a destination into a GPS, drivers who were familiar with GPS did much better than those who were not. These findings, which support previous studies' results,[34] suggest that age is an important factor in driving safety using GPS. In a follow-up study, training by video, hands-on training, and a control group found that older adults

who had video training and hands-on training performed significantly better than the controls, with the hands-on training group doing better than the video group, but not significantly.35The results of these studies have important implications for practitioners. Clinical team members should encourage older adult drivers to use GPS, especially for unfamiliar areas, but it is important to provide information about learning how to program and use GPS, especially if the older adult is unfamiliar with using everyday screen-based technology such as automated teller machines (ATMs) or email. While other vehicle technology is vehicle-specific, GPS is relatively inexpensive and easily installed in any age or type vehicle or can be accessed on a smart phone.

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CHAPTER 5 DRIVER REHABILITATION

KEY POINTS

- Because driving is the most complex instrumental activity of daily living (IADL), individuals who have difficulty performing activities of daily living (ADLs) and IADLs are likely to be at-risk drivers.
- A driver rehabilitation specialist (DRS) with a professional medical degree is best qualified to make a fitness-to-drive decision when an at-risk older adult has functional impairments in physical, visual, or cognitive abilities.
- A comprehensive driving evaluation is completed by a DRS and occupational therapist and includes a medical and driving history, a clinical assessment of underlying component abilities, and an on-road evaluation that results in a range of client-centered recommendations.
- Older adult driving programs vary widely in terms of services offered, provider credentials, knowledge and education, costs, availability, and outcomes.
- Because the role of an occupational therapist is to evaluate and plan interventions for patients with impairment of ADL and IADLs, a referral to occupational therapy will provide an evaluation of functional risk through analysis of complex activities of daily living, generating evidenced-based recommendations that may include referral for specialized services, a comprehensive driving evaluation, or recommendation to cease driving.
- Before referring to a DRS, advise the older adult about the reason for the referral, the goals of the assessment and associated rehabilitation, the evaluation tests that will likely be done in clinic and on the road, and the expected out-of-pocket cost for these services.

This chapter provides information about driving rehabilitation, the range of services that may be available in a community, and what data is required to respond to the question, "When can I drive?" For the clinical team, this question may come from the older adult driver or as a request from his or her caregiver.

Driving is a complex IADL1 that is impacted by many medical conditions and advanced aging, just like all other ADLs and IADLs.[2-4] Thus, as discussed in Chapter 3, if the patient presents with suspected impairments in ADLs/IADLs, it may be more practical and ethical to refer to a general practice occupational therapist first before the highly specialized services of the DRS. The occupational therapist can evaluate the underlying visual, sensory, physical, and cognitive abilities and/or functional IADL performance (independence in self-care, cooking) as the initial step to determining the intervention plan and determine whether further evaluation specific to driving is needed. The driver may be too impaired to be able to independently manage medications or finances, cook independently, or be left alone for two hours; in that case, all risk factors clearly support the included recommendation of driving cessation. At other times, the skilled expertise of the DRS is essential to better understand capacity for compensation, intervention, and equipment or vehicular modifications. This chapter will describe the scope of driving rehabilitation, the diverse types of driving programs and services, criteria for determining when the DRS is essential, and strategies to address driving as an IADL.

After scoring **Mr. Phillips'** *(introduced in previous chapters) performance on the CADReS toolbox assessments, 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 afterward. His son, who is present at the clinic visit, offers to exercise with him several times a week.*

When Mr. Phillips arrives for his follow-up appointment, he is wearing new glasses. His vision with the new glasses is 20/40 in both eyes. You retest his motor skills, and he is now able to complete the Rapid Pace Walk in 8.0 seconds. His range of motion on finger curl and neck rotation, however, remains restricted and his Trails B test has not improved. With Mr. Phillips' agreement, you refer him to occupational therapy to evaluate other complex IADLs, keeping in mind that he might need further help from a DRS for an evaluation and adaptive equipment.

"Mr. Phillips, I'm pleased that you can see better with your new glasses and that your physical fitness has improved with your walking. Keep up the good work! However, I'm still concerned about your brain's slower ability to process information and your reduced ability to move your neck. 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 understanding your complex daily activities and give us some insight about your driving abilities. Depending how it goes, you might benefit from also seeing a driving rehabilitation specialist."

Mrs. Alvarez *informs you she often looks at her feet to make sure she is using the right pedal. "Mrs. Alvarez, looking at your feet during driving is dangerous, because your eyes are not on the road. I'd like to send you to someone who can professionally evaluate your driving abilities. They will do a full evaluation and assist you in finding ways to safely use the pedals.*

A person 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 or she will also take you out on the road and watch your driving. He or she might recommend some modifications for your car, such as hand controls and teach you how to use them.

"The cost of a professional driving evaluation ranges anywhere from $300 to $600, and there may be additional costs for accessories or rehabilitation training. However, it is possible that insurance may pay for part of the assessment and training. I know this may sound like a lot of money, but I think this is important for your safety and offers you the best chance to keep your license as you face sensory changes in your feet. If you were in a serious car crash, you or someone else could be injured, and the medical costs could end up costing you considerably more money. We should try to prevent that from happening."

OLDER ADULT DRIVERS WHO CAN BENEFIT FROM DRIVING REHABILITATION

Driving evaluation and rehabilitation are appropriate for older adult drivers with a broad spectrum of sensory (i.e., visual, perceptual), physical, and/or cognitive impairments. Driving rehabilitation specialists work with drivers diagnosed with 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, including changes of normal aging.

Previously, it was assumed that all individuals with driving concerns should be seen by a DRS, or at minimum be evaluated "on the road." However, current research evidence supports making a driving decision for some older adults after a careful assessment of vision, cognition, and physical ability as applied to functional ADL/IADL activity. This evidence supports acknowledging that when an individual shows deficits in other complex tasks of daily living, driving cessation should be considered, because driving is the most complex IADL.[4-7] In these cases, referral to the DRS is probably not warranted, unless the family needs the confirmation.

In general, in cases when the older adult has relatively intact cognition, but visual or physical impairment that will impact driving (e.g., amputation, neck fusion), a direct referral to the DRS is warranted.[8] Advancement in vehicle technology allows compensation for a wide range of physical and some visual impairment. Vehicle modifications include extended gear-shift levers where reach is limited, padded steering wheel covers for pain or weakened grip, foot pedal extenders to compensate short leg length, or extra/larger mirrors for patients with restricted range of motion or flexibility, such as in arthritis. The specialist will oversee the process, including ensuring proper installation and training in the use of adaptive equipment.

Recovery and rehabilitation are sometimes lengthy and complicated when the patient has a condition that can affect all underlying skills needed for driving (e.g., stroke, diabetes, head injury) or has a progressive disease (e.g., dementia, Parkinson disease). In these cases, the decision to refer is much more complex. The clinical team must question if return to driving will be an option, evaluate the evidence available from the screening tests, and determine when in the recovery or disease process referral to a DRS would be warranted. In an effort to address these questions, a translational model was developed called OT-DRIVE, a framework for risk identification, treatment planning, and referral.[9]

DECISION INDICATORS FOR DRIVING

The profession of occupational therapy considers driving under the broader IADL of driving and community mobility,[1] acknowledging that ADLs and IADLs are the mainstay of occupational therapy practice. The "typical" occupational therapy evaluation begins with an interview of the patient's desires and goals (i.e., the occupational profile) as well as an assessment of the patient's visual, sensory, motor, and cognitive function using many of the same assessment tools used by the DRS. The outcome of this evaluation is the first step in the OT-DRIVE model (the "OT"); the therapist determines whether driving is important to this client and whether driving will be a risk.[9]

While developed to illustrate a framework for occupational therapy practitioners to use to determine driving risk and interventions,[9] Figure 1 can be used by general clinicians to describe the current status of patients in terms of driving risk and the most appropriate interventions. The "red" proposes that there is strong evidence from the

Figure 1 - Framework for OT-DRIVE

medical perspective and is supported by evaluation that driving risk is high in all or most areas (vision, perceptual, cognition) and that impairments exceed the threshold for safe driving. Patients in the "red" include individuals with moderate/severe dementia or whose insight and judgment have been impaired by major trauma. A referral to the specialized services of a DRS is not warranted, because the generalist occupational therapist and/or other service providers such as social workers can develop an intervention plan for mobility that includes driving cessation, turning the focus to mobility preservation through exploration of supportive transportation.

The "green" describes patients who may have temporary health issues that preclude driving for a period of time but have no evidence of impaired capacity or fitness to drive. Examples may be patients recovering from hip or knee replacement or hand or arm injuries. While these patients currently haves physical impairments that limit driving now, their cognitive capacity to self-restrict during this interval is intact. For these individuals, an appropriate typical recovery recommendation may be to "return to driving slowly when you feel able to do so." However, through addressing short-term mobility options during the period of non-driving, the clinical team should also encourage physical exercise, promote driver safety programs, and discuss warning signs for the future.

When diminished visual, cognitive, or physical abilities indicate concern for independence in managing complex IADLs, driving should be addressed. Recognizing these concerns is the first responsibility of the clinician/healthcare provider. Seeking data to better understand the level of impairment and its impact on driving is a prudent next step. When there is not clear evidence (i.e., not "red" or "green"), determining the degree to which the impairments affect fitness to drive is categorized as "yellow," supporting a specialized evaluation best done by the DRS. Using evidence from evaluations and clinical judgment, the general practice occupational therapist can determine if it is best to 1) optimize subskills for driving in rehabilitation, 2) consider other services to improve fitness to drive, or 3) determine the readiness for a comprehensive driving evaluation by a DRS, scheduled at the "right time."[9]

> **Mr. Phillips** *returns for a follow-up visit after undergoing the occupational therapist's IADL evaluation. The results indicated that Mr. Phillips scored below normal limits on several cognitive assessments. When observed performing complex IADL tasks, Mr. Phillips had difficulty with completing tasks as directed and organizing the elements of tasks; there were also issues with safety. The occupational therapist recommended that someone assist Mr. Phillips with medication management and his finances, and that he should actively plan alternative transportation options.*

DRIVER REHABILITATION

The goal of driver rehabilitation is to assist individuals with disabilities or age-related impairments in maintaining independent driving through use of specialized mobility equipment and/or training.[10]

Driving rehabilitation specialists have advanced education in clinical and on-road evaluation, driving education, adaptive strategies and means for compensation, an extensive understanding of the vehicle, and the array of aftermarket options including vehicle modification. It is important to understand this service is highly specialized, and some states require licensing as a driving instructor to take patients on the road. While driver rehabilitation is a multidisciplinary field,

the majority of DRSs are occupational therapists who have completed additional training in driver rehabilitation while others have degrees in medical fields such as physical therapy or psychology. Those with nonmedical backgrounds tend to come from education, transportation or community mobility backgrounds, such as driving school instructors or driver education programs. The diversity of programs and service providers will be discussed later in this chapter along with the implications for cost and appropriate referral.

THE ROLE AND FUNCTIONS OF DRIVER REHABILITATION SPECIALISTS (DRS)

A DRS provides "clinical driving evaluations and driving mobility equipment evaluations and intervention to develop or restore driving skills and abilities."[11]

The DRS with a medical background performs a comprehensive driving evaluation that includes an in-depth clinical assessment of functional abilities plus an on-road performance evaluation. A comprehensive driving evaluation can last one to four hours, depending on the older adult's disabilities, driving needs, and the driver rehabilitation program model. Typically, after the clinical assessment, the on-road evaluation is performed if the older adult driver meets the minimum state standards for health and vision and holds a valid driver's license or permit.

Based on the data gathered through these two components, a DRS develops a summary of the evaluation results and an individualized plan for preserving safe mobility, be it as a driver or non-driver. Although driver rehabilitation programs vary, most typically consist of a comprehensive driving evaluation that includes these important elements:

Comprehensive Driving Evaluation[11]

■ Clinical assessment, including review of driving history, driving needs, and license status; review of medical history and medications; functional assessments of vision/perception (e.g., acuity, contrast sensitivity, visual fields, ocular range of motion, saccades, phorias, convergence/divergence, depth perception, visual closure); physical abilities (e.g., balance, range of motion, motor strength, coordination, sensation, reaction time); and cognition (e.g., memory, divided and selected attention, judgment, executive function, processing speed, multi-tasking, insight).

■ On-road evaluation to determine the degree of driving risk, including vehicle control, adherence to traffic rules and regulations, environmental awareness and interpretation, defensive driving, wayfinding, and consistent use of compensatory strategies for visual, cognitive, physical, and behavioral impairments. Vehicle ingress/egress, mobility aid management (e.g., ability to transport a wheelchair or scooter), and vehicle preparation and maintenance are also evaluated. The on-road evaluation is typically performed in the evaluation vehicle equipped with dual brakes, a rearview mirror and eye-check mirror for the DRS, and any necessary adaptive equipment. (Note: Some programs separate the clinical and on-road portions of the evaluation on different days for several reasons: in consideration of fatigue, require on-road driving on two separate occasions to evaluate for consistency, or for team scheduling with the on-road evaluation provider).

■ Communication of assessment results and recommendations is typically provided directly to the older adult, the caregivers, and/or referring health care provider/agency; the process for communication of the DRS evaluation of outcomes and recommendations may vary by program model and local referral agreement. Variations include sending driving evaluation results to the clinical team to relay to the older adult driver and

caregivers.

■ Recommendations following a comprehensive driving evaluation may include:

- No restrictions. The older adult demonstrates adequate skills to drive with no currently diagnosed medical condition known to increase risk over time.

- Return to driving after the vehicle is equipped with adaptive driving equipment to match the older adult's individual needs and instruction/training after installation.

- Continue to drive with restrictions that are consistent with state laws. Some states do not offer restrictions, whereas others may offer a restricted license that would define, for example, a limitation to geographic areas (e.g., 5-mile radius from residence or local routes) or conditions (e.g., no night or highway driving) in which the older adult drives. (Note: Recommendations may be offered that are informal, but "Restrictions" describe a licensing action associated with the license similarly to how a required vision correction is part of licensure.)

- Reevaluation on a regular basis is indicated when an older adult demonstrates adequate skills to drive at present but has been diagnosed with a progressive disorder that may cause future decline (e.g., dementia, Parkinson disease).

- Temporary driving cessation, noting potential for improvement and driving in future. Recommended intervention to improve deficits in vision, perception, motor and/or cognition is advised when the older adult has medical condition(s) that can improve over time (e.g., stroke, heart attack, traumatic brain injury) and can return for reevaluation.

- Permanent driving cessation. This is advised when an older adult does not demonstrate the necessary skills to compensate for visual, perceptual, or cognitive deficits essential to safely resume driving, and the potential for improvement, even with intervention, is poor. In these cases, the message conveys that all options were explored and considered, but the decline the older adult has experienced has made operation of a motor vehicle unsafe for self and community. Alternative transportation options and a support network should be addressed with the older adult by referring to appropriate providers, including the generalist occupational therapist.

The Vehicle

■ For some, the mobility solution may center on the vehicle. Aftermarket adaptations or vehicle modification may address personal vehicle mobility for the patient as driver or support access, securement, and caregiver support for mobility as passenger. The patient and family/care partners are considered when addressing driving and community mobility.

■ Services may include:

- Assessment of vehicle, vehicle modifications, and equipment for the older adult's safe transport as a passenger or driver. Modifications may include accommodations for transportation of power wheelchair or other mobility device or if the individual is to be a wheelchair passenger or driver.

- Address the needs of caregivers as the driver responsible for transporting the individual as a passenger (e.g., inability to assist with transfer because of arthritis, limitations in stowing mobility devices, transporting scooter). In these cases, mobility equipment solutions such as scooter or wheelchair lifts or tie-down systems may be recommended to preserve mobility by proactively addressing the caregiver's physical capabilities, limitations, and mobility goals.

Older adults who perform poorly on the clinical

assessment may or may not be offered an on-road evaluation. If the older adult driver is deemed too impaired, the risk to the driver and evaluator may preclude an on-road evaluation for safety reasons. However, even after poor performance on the clinical driving evaluation, the DRS may still conduct an on-road evaluation in some cases:

■ Older adults who perform poorly on some individual components of the clinical driving evaluation may still demonstrate safe driving because there is no clinical assessment tool that accurately predicts on-road performance as clearly as the on-road assessment and driving is an overlearned skill.[6,12-13]

■ Older adults and their family and caregivers may need concrete evidence of unsafe driving. However, in the case of the older adult with cognitive impairment who lacks insight, the on-road evaluation may in fact serve to change only the perception of the family but not that of the driver.

Treatment and Intervention

■ Adaptive driving instruction or driver retraining, with or without vehicle modifications.

■ Coordination of vehicle modifications:

- Vehicle consultation: The DRS often serves as a consultant to older adults who are purchasing a new vehicle to ensure that the vehicle will accommodate the necessary mobility limitations (door opening or seat height to optimize ease in transfer, ease in applying adaptive equipment now or in the future).

- Vehicle modification recommendations: The DRS provides written recommendations for all vehicle/equipment needs to the older adult driver, third-party payer, and vehicle/equipment dealer.

- Adaptive equipment/vehicle modification inspection: The DRS is involved with the older adult and mobility equipment dealer in a final fitting to ensure training in the use of equipment and optimal functioning of the recommended vehicle/equipment. (For more information on mobility equipment dealers [MEDs], see www.nmeda.com, the website of the National Mobility Equipment Dealers Association).

■ Driving simulators have a growing role in older adult driving evaluation, training, and intervention.[14] Although simulator sickness is an issue for some older adults,[15] simulators are emerging as an effective tool for driving assessment[16] and more importantly, as an intervention tool for older adults with medical conditions.[17-20] The numbers of occupational therapy departments in hospital settings purchasing driving simulators are increasing; thus, research in this area is needed.

Mrs. Alvarez *is referred and evaluated by the DRS.*

The DRS completes a comprehensive driving evaluation for Mrs. Alvarez. Vision and cognition are within normal limits for someone her age. However, she demonstrates slower reaction times, especially for motor tasks. She informs the DRS she often looks at her feet to make sure she is using the right pedal. Physical results indicate that she has poor proprioception in her feet and cannot safely use the pedals without visually watching her feet. Because of her strong cognitive skills and motivation to maintain driving, the DRS believes she is a good candidate for hand controls, so a second appointment is scheduled with the DRS to try a few different types of controls to see which works best for her (and her vehicle). Once the hand controls are fitted into her vehicle, Mrs. Alvarez will take a series of lessons with the DRS to ensure the equipment is fitted properly to her vehicle and she has the appropriate training.

Making the Referral to the DRS

Before making the referral, advise the older adult about your reasons for recommending a specialist evaluation, the goals of the assessment and rehabilitation, the evaluation and tests that will likely be offered, and the expected out-of-pocket cost for these services.

Some programs require a written healthcare provider prescription while others may not. Understanding your local requirements or clinic policies is important to appropriately and efficiently refer the older adult. A driving evaluation prescription should list specific reasons and needs that justify the evaluation and/or rehabilitation. For example, "OT driver evaluation for hand weakness with poor finger flexion or for limited neck rotation secondary to arthritis," "driving evaluation for hemianopsia secondary to stroke," or "driving evaluation for cognitive impairments secondary to Alzheimer disease" provide guidance for the DRS and are more likely to be reimbursed by insurance. In contrast, vague orders for "an older adult," "debilitated," or "frail" older adult do not provide adequate guidance to the DRS and can complicate insurance reimbursement. In addition, the DRS will also need information on current diagnoses and medications.

If appropriate and feasible in the clinical team setting, a follow-up appointment should be scheduled after the driving evaluation. If the recommendation from the DRS is continued driving with or without restrictions, adaptive devices, and/or rehabilitation, the recommendations should be reinforced by the clinical team. When applicable, caregivers should be informed of these recommendations. Also remember that older adult drivers should be counseled on health maintenance and safe driving behaviors and encouraged to develop a transportation plan that includes alternative forms of transportation or choices in case they experience temporary or long-term changes that may limit driving in the future. If the older adult is not considered fit to drive, then this information must be conveyed clearly to the older adult and caregivers, and followed up with services that support driving cessation and address continued mobility as a non-driver (see Chapter 6).

Special mention is made of other rehabilitation specialists who may help address impairments that are common 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. Neuro-ophthalmologists or optometrists may provide vision training, especially for older adults with neurologic insults that affect convergence, alignment, nystagmus, eye apraxia, and/or visual neglect from stroke, head injury, brain tumors, and trauma.

CONDITIONS COMMONLY SEEN IN DRIVING PROGRAMS

Normal aging happens to everyone at different rates, and research has shown that age alone does not justify a driving evaluation.[13] In fact, most older adults appropriately self-restrict and do not engage in risky driving behaviors (e.g., speeding, tailgating, drinking and driving).[13,21] However, many medical conditions require the clinical team to consider how the condition and/or its medications affect driving, as outlined specifically in Chapter 9. The most common conditions of older adults referred to a DRS include the neurological progressive conditions (e.g., dementia, Parkinson disease), stroke and/or acquired brain, and advanced aging.

Dementia or Other Progressive Conditions

For the progressive conditions, it is "not if, but when" to cease driving.[22] Early in the disease

stages, intervention by an occupational therapy practitioner may include assisting the older adult and family in developing a transportation plan likely to include criteria indicative of eventual cessation. This plan may focus on determining the individual's current driving needs, incorporating strategies for compensation such as finding altered driving routes (e.g., avoiding left hand turns or busy intersections), guiding family to gather performance data by observing practice drives, and recommending close and extended follow-up by the medical provider or seeking the services of a DRS as the condition progresses. The transportation plan offers the older adult and family the opportunity to anticipate and plan for transition, framing driving cessation as a process and not an arbitrary or "too late" decision. The conversation of cessation must be followed by access to local providers to explore resources, alternative forms of transportation, and the supports the older adult requires (e.g., escort, curb-to-curb, or door-to-door). An example may be found in Appendix C. For those unwilling or unable to understand the cessation recommendation, caregivers should be provided with strategies to prevent access to the car and to manage ongoing resistance and arguments demanding access to the car. Other clinical team members may also be helpful when supporting older adults and caregivers who lack insight. In some instances when compliance with cessation is questioned, a process for reporting the unsafe driver to the state licensing authority may be required (see Chapter 7). Clinicians in particular may be asked to respond if the older driver receives a letter from a medical review board, vehicle licensing agency, or law enforcement. An example may be found in Appendix C. Health care providers may be asked to complete a state medical reporting form (for an example, see http://dor.mo.gov/forms/1528.pdf).

Acquired Brain Injury or Stroke

In contrast to dementia, individuals who have had an acquired brain injury such as a stroke have great potential for recovery and rehabilitation. Research has shown that recovery can be up to months or years following the initial stroke, especially if rehabilitation services are ongoing. Because returning to driving is one of the most valued IADLs of individuals with stroke,[23] individuals with brain injury who have insight and meet visual state standards need to be evaluated by the DRS at the right time in recovery. Evidence supports individuals with stroke successfully returning to driving[16, 24-25] if evaluation and intervention occur at the right time with the appropriate equipment.

Mr. Phillips *returns for a follow-up visit after undergoing driver assessment. The DRS recommended that wide-angle rearview mirrors be fitted on Mr. Phillips' car and install a back-up camera (if possible). Additionally, the DRS recommended strategies to reduce distractions and cognitive fatigue that included no longer listening to the radio, only driving in familiar places and/or using a GPS for unfamiliar places, and not using interstates. The DRS also recommended and reviewed the high-risk intersections that should be avoided. Mr. Phillips states that he is driving more comfortably with his adaptive device and use of strategies, and his son says that he appears to be focusing better on his driving tasks. You counsel him on the Tips for Safe Driving and Ten Tips for Aging Well resources, advise him to continue walking, and encourage him to start planning alternative transportation options. His daughter is recruited to assist Mr. Phillips and his son with these discussions and interventions.*

PROGRAMS THAT ADDRESS DRIVING: FROM EDUCATION TO REHABILITATION

Driving rehabilitation encompasses a range of programs and providers. The interprofessional nature of driving rehabilitation involves services equipped to address a range of needs. Most health care professionals understand that driving rehabilitation should only involve medical providers; however, sometimes other driving services are assumed to be included. The Spectrum of Driver Services[26] document was developed to define and describe the range of driver services, including providers' education and credentials, required providers' knowledge, typical services provided, and outcomes of each program type. Figure 2 differentiates the programs and can assist the clinical members in referring to appropriate levels of service.[26] The significant features include:

■ The differentiation between community-based education; medically based assessment, education, and referral; and specialized evaluation and training with driver rehabilitation programs.

■ There are five major types of program (i.e., driver safety programs, driving schools, driver screening, clinical IADL evaluations, and driving rehabilitation programs), with typical providers described with their credentials. This will assist in determining which programs use providers with a medical background.

■ Under each program type, the required providers' knowledge and typical services will assist the reader in being able to differentiate preventive services (i.e., updating driving skills or acquiring a driver's license) from medically based assessment. These sections also articulate the differences between screening at a physician's office, a clinical (or IADL) assessment that might be done by a generalist occupational therapist, and the specialized services provided by the DRS.

■ The outcome of each program type is clearly stated. Because driver safety programs provide education and awareness and driving schools enhance skills for healthy drivers, these two categories **should not** be the intervention resource for those with medical conditions. The medically based assessment, education, and referral programs that indicate risk or the need for referral to the specialized programs are the appropriate programs for these individuals.

Thus, the clinical team member's task is to determine if the need is related to:

1. knowledge and learning (e.g., knowing how, road knowledge to navigate the complex driving environment),
2. lack of confidence (due to limited driving), or
3. capacity (e.g., visual processing, speed and flexibility to use vehicle controls, cognitive capacity to judge and manage the unexpected, stamina to remain alert and attentive throughout).

If the issue is capacity, because the older adult demonstrates impairments through use of the clinical screening (CADReS) and/or by performance in other IADLs, the clinician should consider referral to a general practice occupational therapist who can offer a traditional professional evaluation of IADLs, including high-level/complex IADLs, to determine driving risk and safety. If an older adult is unable to be left alone for 2 hours, for example, this level of IADL impairment may offer adequate data to make driving recommendations based on impaired capacity for living independently as well as driving. If the IADL status offers a mix of strengths and impairments, the older adult could then be referred on to a comprehensive driving evaluation. The question of driving competence may be the first clue the clinical team has that may lead to a general review of IADL status and eventual diagnosis of

Figure 2 - Spectrum of Driver Services

Spectrum of Driver Services: Right Services for the Right People at the Right Time

A description consumers and health care providers can use to distinguish the type of services needed for an older adult.

	COMMUNITY-BASED EDUCATION		MEDICALLY-BASED ASSESSMENT, EDUCATION AND REFERRAL		SPECIALIZED EVALUATION AND TRAINING
Program Type	**Driver Safety Programs**	**Driving School**	**Driver Screen**	**Clinical IADL Evaluation**	**Driver Rehabilitation Programs (Includes Driver Evaluation)**
Typical Providers and Credentials	Program specific credentials (e.g. AARP and AAA Driver Improvement Program).	Licensed Driving Instructor (LDI) certified by state licensing agency or Dept. of Education.	Health care professional (e.g., physician, social worker, neuropsychologist).	Occupational Therapy Practitioner (Generalist or Driver Rehabilitation Specialist#). Other health professional degree with expertise in Instrumental Activities of Daily Living (IADL).	Driver Rehabilitation Specialist#, Certified Driver Rehabilitation Specialist*, Occupational Therapist with Specialty Certification in Driving and Community Mobility+.
Required Provider's Knowledge	Program specific knowledge. Trained in course content and delivery.	Instructs novice or relocated drivers, excluding medical or aging conditions that might interfere with driving, for purposes of teaching / training / refreshing / updating driving skills.	Knowledge of relevant medical conditions, assessment, referral, and / or intervention processes. Understand the limits and value of assessment tools, including simulation, as a measurement of fitness to drive.	Knowledge of medical conditions and the implication for community mobility including driving. Assess the cognitive, visual, perceptual, behavioral and physical limitations that may impact driving performance. Knowledge of available services. Understands the limits and value of assessment tools, including simulation, as a measurement of fitness to drive.	Applies knowledge of medical conditions with implications to driving. Assesses the cognitive, visual, perceptual, behavioral and physical limitations that may impact driving performance. Integrates the clinical findings with assessment of on-road performance. Synthesizes client and caregiver needs, assist in decisions about equipment and vehicle modification options available. Coordinates multidisciplinary providers and resources, including driver education, health care team, vehicle choice and modifications, community services, funding / payers, driver licensing agencies, training and education, and caregiver support.
Typical Services Provided	1) Classroom or computer based refresher for licensed drivers: review of rules of the road, driving techniques, driving strategies, state laws, etc. 2) Enhanced self-awareness, choices, and capability to self-limit.	1) Enhance driving performance. 2) Acquire driver permit or license. 3) Counsel with family members for student driver skill development. 4) Recommend continued training and / or undergoing licensing test. 5) Remedial Programs (e.g., license reinstatement course for teens / adults, license point reduction courses).	1) Counsel on risks associated with specific conditions (e.g., medications, fractures, post-surgery). 2) Investigate driving risk associated with changes in vision, cognition, and sensory-motor function. 3) Determine actions for the at-risk driver: • Refer to IADL evaluation, driver rehabilitation program, and / or other services. • Discuss driving cessation; provide access to counseling and education for alternative transportation options. 4) Follow reporting / referral structure for licensing recommendations.	1) Evaluate and interpret risks associated with changes in vision, cognition, and sensory-motor functions due to acute or chronic conditions. 2) Facilitate remediation of deficits to advance client readiness for driver rehabilitation services. 3) Develop an individualized transportation plan considering client diagnosis and risks, family, caregiver, environmental and community options and limitations: • Discuss resources for vehicle adaptations (e.g., scooter lift). • Facilitate client training on community transportation options (e.g., mobility managers, dementia-friendly transportation). • Discuss driving cessation. For clients with poor self-awareness, collaborate with caregivers on cessation strategies. • Refer to driver rehabilitation program. 4) Document driver safety risk and recommended intervention plan to guide further action. 5) Follow professional ethics on referrals to the driver licensing authority.	Programs are distinguished by complexity of evaluations, types of equipment, vehicles, and expertise of provider. 1) Navigate driver license compliance and basic eligibility through intake of driving and medical history. 2) Evaluate and interpret risks associated with changes in vision, cognition, and sensory-motor functions in the driving context by the medically trained provider. 3) Perform a comprehensive driving evaluation (clinical and on-road). 4) Advise client and caregivers about evaluation results, and provides resources, counseling, education, and / or intervention plan. 5) Intervention may include training with compensatory strategies, skills, and vehicle adaptations or modifications for drivers and passengers. 6) Advocate for clients in access to funding resources and / or reimbursement. 7) Provide documentation about fitness to drive to the physician and / or driver-licensing agency in compliance with regulations. 8) Prescribe equipment in compliance with state regulations and collaborate with Mobility Equipment Dealer^ for fitting and training. 9) Present resources and options for continued community mobility if recommending driving cessation or transition from driving. Recommendations may include (but not restricted to): 1) drive unrestricted; 2) drive with restrictions; 3) cessation of driving pending rehabilitation or training; 4) planned re-evaluation for progressive disorders; 5) driving cessation; 6) referral to another program.
Outcome	Provides education and awareness.	Enhances skills for healthy drivers.	Indicates risk or need for follow-up for medically at-risk drivers.		Determines fitness to drive and provides rehabilitative services.

#DRS – Health professional degree with specialty training in driver evaluation and rehabilitation. *CDRS – Certified Driver Rehabilitation Specialist-Credentialed by ADED (Association for Driver Rehabilitation Specialists). +SCDCM – Specialty Certified in Driving and Community Mobility by AOTA (American Occupational Therapy Association).
^Quality Approved Provider by NMEDA (National Mobility Equipment Dealers Association).

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degenerative processes such as Alzheimer disease.

By distinguishing knowledge (i.e., rules of the road) from capacity (i.e., physical and cognitive abilities), the clinician will be better equipped to select from the array of support or evaluation services available. The CADReS screening tool will offer data to consider when selecting programs that address knowledge and skills, or capacity for patients considered medically at risk.

Many relatively healthy aging drivers may have their needs best addressed through education. However, it is important to remember the needs or safety concerns of the experienced (older) driver are distinctly different from those of the new learner or "novice driver" (the primary focus of most driving schools). While some driving schools offer driving lessons to adults who have never driven, are new to the region or country, or are hesitant because they have not driven for many years, the more common education types are the low-cost, group education "refresher" courses offered in communities by AAA, AARP, or other providers.

In fact, a new program called the "Driving Check-Up" has been developed by the American Automobile Association Foundation for Traffic Safety (AAAFTS) that focuses on a driving evaluation of driving skills and knowledge, but not medical fitness to drive.[27] Such a service could provide support for some older adults without specific medical conditions who may need help with driving skills. For example, if an older adult has a stroke and can no longer drive, the spouse, now assuming the role of primary driver, may be licensed, but lack experience or confidence having been in the passenger seat for many previous years. For spouses who have not driven in many years, a referral to a driving school for a driver refresher course may improve confidence and safety.

Clinician: I'm pleased to see you **Mrs. Alvarez,** *and I understand you drove yourself to this appointment with your new, adapted vehicle. How is it working out?*

Mrs. Alvarez: It is working, but it takes a lot of practice. It was hard to learn, but I really want to be independent, so I worked with the DRS for all the hours she recommended, and I feel more comfortable than I did in the beginning.

Mrs. Alvarez: It is surprising how cars can be adapted, even my old car! I do think I am safer now than when I was always looking for where my feet were on the pedals. I am slowly getting out more than before. However, the DRS did recommend that I start making a transportation plan for the future.

Clinician: That is a really good idea, and we can give you materials to help you with that plan.

VARIETY OF DRIVING REHABILITATION PROGRAMS[23]

Figure 3 illustrates the three main levels of driver rehabilitation programs, which are defined as basic, low tech, and high tech.[26] The basic program is appropriate for older adult drivers with no or minor physical impairments who require only very basic adaptive equipment in the vehicle. The low-tech program can address the needs of older adult drivers who may need mechanical or low-tech vehicle modifications or equipment (e.g., hand controls, left foot accelerator, spinning knob for one-handed steering) and/or training in safe use on the road. The high-tech program is necessary for older adults who need to drive from a wheelchair or need high-tech equipment, such as low-effort steering. The programs that have high tech programs typically provide the full spectrum, including the basic program services.

Figure 3 - Spectrum of Driver Rehabilitation Program Services

Spectrum of Driver Rehabilitation Program Services

A description consumers and health care providers can use to distinguish the services provided by driver rehabilitation programs which best fits a client's need.

Program Type	DRIVER REHABILITATION PROGRAMS Determine fitness to drive and / or provide rehabilitative services.		
Levels of Program and Typical Provider Credentials	**BASIC** Provider is a Driver Rehabilitation Specialist (DRS)# with professional background in occupational therapy, other allied health field, driver education or a professional team of CDRS or SCDCM with LDI**.	**LOW TECH** Driver Rehabilitation Specialist#, Certified Driver Rehabilitation Specialist*, Occupational Therapist with Specialty Certification in Driving and Community Mobility+, or in combination with LDI. Certification in Driver Rehabilitation is recommended as the provider for comprehensive driving evaluation and training.	**HIGH TECH** Driver Rehabilitation Specialist#, Certified Driver Rehabilitation Specialist*, Occupational Therapist with Specialty Certification in Driving and Community Mobility+. Certification in Driver Rehabilitation is recommended as the provider for comprehensive driving evaluation and training with advanced skills and expertise to complete complex client and vehicle evaluation and training.
Program Service	Offers driver evaluation, training and education. May include use of adaptive driving aids that do not affect operation of primary or secondary controls (e.g., seat cushions or additional mirrors). May include transportation planning (transition and options), cessation planning, and recommendations for clients as passengers.	Offers comprehensive driving evaluation, training and education, with or without adaptive driving aids that affect the operation of primary or secondary controls, vehicle ingress / egress, and mobility device storage / securement. May include use of adaptive driving aids such as seat cushions or additional mirrors. At the Low Tech level, adaptive equipment for primary control is typically mechanical. Secondary controls may include wireless or remote access. May include transportation planning (transition and options), cessation planning, and recommendations for clients who plan to ride as passengers only.	Offers a wide variety of adaptive equipment and vehicle options for comprehensive driving evaluation, training and education, including all services available in Low Tech and Basic programs. At this level, providers have the ability to alter positioning of primary and secondary controls based on client's need or ability level. High Tech adaptive equipment for primary and secondary controls includes devices that meet the following conditions: 1) capable of controlling vehicle functions or driving controls, and 2) consists of a programmable computerized system that interfaces / integrates with an electronic system in the vehicle.
Access to Driver's Position	Requires independent transfer into OEM^ driver's seat in vehicle.	Addresses transfers, seating and position into OEM^ driver's seat. May make recommendations for assistive devices to access driver's seat, improved positioning, wheelchair securement systems, and / or mechanical wheelchair loading devices.	Access to the vehicle typically requires ramp or lift and may require adaptation to OEM driver's seat. Access to driver position may be dependent on use of a transfer seat base, or clients may drive from their wheelchair. Provider evaluates and recommends vehicle structural modifications to accommodate products such as ramps, lifts, wheelchair and scooter hoists, transfer seat bases, wheelchairs suitable to utilize as a driver seat, and / or wheelchair securement systems.
Typical Vehicle Modification: Primary Controls: Gas, Brake, Steering	Uses OEM^ controls.	Primary driving control examples: A) mechanical gas / brake hand control; B) left foot accelerator pedal; C) pedal extensions; D) park brake lever or electronic park brake; E) steering device (spinner knob, tri-pin, C-cuff).	Primary driving control examples (in addition to Low Tech options): A) powered gas / brake systems; B) power park brake integrated with a powered gas / brake system; C) variable effort steering systems; D) reduced diameter steering wheel, horizontal steering, steering wheel extension, joystick controls; E) reduced effort brake systems.
Typical Vehicle Modification: Secondary Controls	Uses OEM^ controls.	Secondary driving control examples: A) remote horn button; B) turn signal modification (remote, crossover lever); C) remote wiper controls; D) gear selector modification; E) key / ignition adaptions.	Electronic systems to access secondary and accessory controls. Secondary driving control examples (in addition to Low Tech options): A) remote panels, touch pads or switch arrays that interface with OEM^ electronics; B) wiring extension for OEM^ electronics; C) powered transmission shifter.

#DRS - Health professional degree with specialty training in driver evaluation and rehabilitation, *CDRS – Certified Driver Rehabilitation Specialist – Credentialed by ADED (Association for Driver Rehabilitation Specialists). +SCDCM – Specialty Certified in Driving and Community Mobility by AOTA (American Occupational Therapy Association) ^OEM – Original Equipment installed by Manufacturer.
**LDI-licensed driving instructor.

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It is important to note that the services of an occupational therapist providing medically necessary services are covered by third-party payers, Medicare, and Medicaid.

FUNDING SOURCES FOR DRIVER ASSESSMENT AND REHABILITATION

The costs associated with specialized driving services may be a barrier to access and adherence to the recommendation for evaluation. Many specialized services require associated "out-of-pocket" fees, and the comprehensive driving evaluation is no exception. If driving safety is in question, the evaluation data to support continued driving or cessation is essential. Ethically, recommendations must follow a medically indicated need and not be based on cost.

It is also important to recognize this highly skilled evaluation is not the same as a driving test offered through the state licensing authority, which is typically a basic entry-level test of knowledge (rules of the road) and skills of handling a motor vehicle (overlearned and practiced by older adults). Typically, the individual must complete a knowledge test, pass a vision screen, and demonstrate a specific list of prompted maneuvers on the road. It is not a measure of capacity, judgment, or executive ability, and it is not geared to the experienced driver. It results only in a pass/fail with no recommendation or information to caregivers of what comes next. Similarly, typical driving schools are geared toward education and learning how to drive safety. The typical driving instructor expertise is teaching and learning, and he or she may offer an older driver multiple lessons to resolve the safety issue of missing a stop sign, when in fact, the cognitively impaired older adult will likely not benefit from lessons as a novice driver might. Accordingly, while costs for driving evaluations vary, informed consumers should consider the full package, for example, if lessons are included.

As a referral source, understanding and communicating a basic understanding of costs and options may improve the effectiveness of referral. There are many models of programs, some private practice, some associated with hospitals or universities. All likely have some combination of costs that may be insurance eligible and some that are not. It would be misleading to offer global cost estimates in this document. Periodic inquiry with local providers is the most straightforward way to ensure communication of accurate information. The following questions may guide this inquiry:

1. What are your costs for driver assessment and training? Costs vary between programs and according to the extent of services provided (e.g., evaluation, training, rehabilitation intervention).
2. What are typical costs for basic adaptive equipment?
3. Does your program assist patient exploration of insurance and funding options? Typically, the DRS is well informed of funding opportunities and will assist clients in this exploration.

Two programs that typically support expenses associated with comprehensive driving evaluations, driver rehabilitation, and vehicle modifications are state workers' compensation and vocational rehabilitation programs. These programs offer financial support for mobility for persons with a disability in support of return-to-work, meaning many older adult drivers will not qualify for either program. Coverage from Medicare, Medicaid, and private insurance companies is variable and depends on local interpretation of policies (i.e., government fiscal intermediaries).[28] (Please see the reference for examples of how to appeal denials and pursue funding for coverage of driving evaluations.) The Veterans Administration (VA) programs may also cover driving evaluations and training for spinal cord and mobility-related injuries, as well as offer senior driving safety assessments, although not all states have a VA driver rehabilitation program. In those instances,

the VA program may contract with a local driver rehabilitation program to provide services to veterans. Many driver rehabilitation programs choose to offer their services as private pay only, because current reimbursement models are inadequate to cover the expenses of this individualized and highly trained specialized service. Since rates and extent of insurance reimbursement vary, older adult drivers should be encouraged to independently inquire about program rates, insurance coverage, and payment procedures that may include the requirement to pay up-front and receive the approved reimbursement at a later time.

Also, older adults and caregivers should be advised to carefully review insurance policies. Of interest, at least one automobile insurance provider offers a plan that reimburses up to $500 for a comprehensive driving evaluation performed by a DRS who is also an occupational therapist. This specific policy allows the older adult up to three years recovery to access this benefit.

Transportation is a significant factor in decisions for housing and placement in facilities. The personal vehicle driven by self or spouse is the most preferred mode of transportation. When balanced against the personal and global costs to the older adult driver and the community of a crash, or services needed to support an older adult lacking independent mobility, the comprehensive driving evaluation may prove to be a cost-saving strategy.

FINDING A DRIVER REHABILITATION SERVICE

Two national associations offer education and credentials in driver rehabilitation. The American Occupational Therapy Association (AOTA) offers a multitude of education options to develop specialty expertise in driving and community mobility. In addition, a portfolio-based professional Specialty Certification in Driving and Community Mobility (SCDCM) (www.aota.org/Education-Careers/Advance-Career/Board-Specialty-Certifications/Driving-Community-Mobility.aspx) is available for application from the credentialing body at AOTA. The SCDCM includes a development plan and must be renewed, via application, every 5 years. Only occupational therapy practitioners may apply for certification for this advanced level of achievement.

The Association for Driver Rehabilitation Specialists (ADED) (formerly Association of Driver Educators for the Disabled, still known as ADED) also offers education and certification to become a DRS. Because persons of varied backgrounds may apply for certification through ADED, the education and experience qualifications to take the certification examination vary. Once attained, ADED requires that the certified driver rehabilitation specialists (CDRSs [www.aded.net/?page=215]) renew their certification every 3 years by fulfilling a minimum of 30 continuing education hours in the field of driver rehabilitation. Although many DRSs either hold certification or are in the process of obtaining the necessary education and experience to sit for the examination, in most states certification is not required to practice driver rehabilitation.

Driver rehabilitation programs are expanding nationally to include occupational therapy practitioners with advanced knowledge in driving rehabilitation who have formed relationships (for referral) with the smaller number of highly trained specialists. DRSs are located across the country, although availability is typically in urban areas or large medical centers. DRSs can be in private practice or affiliated with hospitals, rehabilitation centers, driving schools, VA hospitals, and state motor vehicle departments. Driving rehabilitation services may also be accessed through area agencies on aging, universities, and

area departments of education. Before referring older adults to driving rehabilitation services, it is important to ensure the appropriate level of service needed is available. The credentials and knowledge level of the provider, typical services provided, and expected outcome should match the needs of the older adult driver and caregivers. A background in driver education alone is likely insufficient for appropriate assessment of medically impaired drivers and correct interpretation of the assessment.

To find a provider in the local area, calling the occupational therapy departments in local hospitals or rehabilitation centers is a good place to start. The AOTA website is a source to locate a DRS by state (https://www.aota.org/olderdriver). The ADED's online directory is another good source of information (https://www.aded.net/search/custom.asp?id=1984) to locate DRSs and CDRSs. The local chapters of subspecialty organizations such as the Alzheimer's Association may keep up-to-date driving evaluation program information on their websites. Many local chapters of the Alzheimer's Association (https://www.alz.org/help-support/caregiving/safety/dementia-driving) also provide lists of area driving evaluation programs.

When selecting a DRS or driving rehabilitation program, the older adult driver and/or caregivers may wish to inquire:

- How many years of experience does the DRS (or program) have and what types of clients do they serve? In many cases, experience may be a more important indicator of quality than certification alone. Many well-qualified DRSs are not certified (and certification is typically not required).
- For older adults with medical conditions, it is important to ascertain if the DRS has a medical background. The complexity of conditions such as dementia, stroke, or Parkinson disease requires a DRS that has been educated in the conditions, medications, and potential progression of the condition.
- Does the driver rehabilitation program provide a comprehensive driving evaluation that includes both clinical and on-road assessments? A DRS who provides both components of the evaluation (or a program whose team of specialists perform both components) is ideal. Referral to two separate specialists or centers is inconvenient for the older adult and the clinical team member and often presents a greater challenge in insurance reimbursement. In addition, some programs use a driving simulator program, which should not be used to replace the on-road component. Simulators have the advantages of reliability and safety, but they are not standardized and validity is limited when compared with the performance-based road test. In addition, in older adults they may induce motion sickness, which can limit the findings.
- Does the program provide rehabilitation and training? A driver rehabilitation program should ideally provide both evaluation and rehabilitation. If the older adult driver will likely need any adaptive devices or vehicle modifications, he or she and their caregivers should go to a "low tech" or "high tech" program (see Appendix C) that has the appropriate equipment to evaluate and train the driver in their use.
- How much can the older adult driver expect to pay out-of-pocket for assessment, rehabilitation, and adaptive equipment?
- Who will receive a report of the assessment outcome? Typically, reports are sent to the older adult driver and to the referring clinical team member and/or referring agency (e.g., workers' compensation or office of retirement services). Some DRSs also send reports to caregivers, at the request of the caregiver and with the older adult's

consent. Whether or not the DRS reports to the state licensing agency is variable and should be clearly stated before the evaluation is initiated. In states with mandatory reporting laws, the DRS and/or physician may send a report to the state licensing agency; even if reporting is not legally required, some will still send a report in the interest of public safety and ethical responsibility. In cases when the recommendation is to cease driving, reporting to the state licensing agency will typically result in the state review board or medical board suspending the license or requesting more information, although each varies in the process and time frame.

- If the older adult receives recommendations to cease driving, does the DRS provide any counseling or aid in transportation planning? Note that DRS counseling does not preclude the need for follow-up by the clinical team. Many times, the older adult and caregivers may be too distressed at the time of evaluation and recommendations to deal with additional information. Mobility counseling and transportation planning are crucial for reinforcing the message to cease driving by providing resources to support continued mobility in the community, as well as demonstrating the health care provider's compassion and support.

WHEN DRIVER ASSESSMENT IS NOT AN OPTION

Unfortunately, driver evaluation and rehabilitation services may not always be readily available in the local area. Even if a DRS is available, the older adult may refuse further assessment or be unable to afford it. However, some patients and caregivers in DRS shortage areas may be willing to travel to have this type of evaluation, particularly if the chances are good that the evaluation may result in prolonging driving life expectancy and safety.

It is important to distinguish whether the recommendation for driver assessment is elective or essential to ongoing driving. If the latter, steps for stopping driving until assessment is done must be clearly communicated to the older adult driver and caregivers and, if necessary, also to the state licensing authority. Older adults who refuse on the basis of cost should be reminded that operating a motor vehicle is expensive and that the assessment is critical for safety and important when considered against the cost of a motor vehicle crash. It is the clinician's ethical duty to report to the licensing authorities if there are clear indications that the older adult is demonstrating unsafe driving practices, resulting in risk to themselves and the public.

If comprehensive driving evaluation through a DRS is not available, there are several options:

- Advocacy efforts can be undertaken to inform local rehabilitation providers that the clinical team is seeking local driving rehabilitation services for older adults. Rehabilitation providers must know of local interest to recognize the need for program growth.

- As discussed, occupational therapists are "generalists" who can provide an occupational therapy evaluation of IADLs. (These services are typically provided and reimbursed by Medicare and Medicaid as occupational therapy services). Because driving is an IADL, these assessments can be used to determine driving risk and potential for risk. Occupational therapists in general practice may also be able to perform specific assessments that provide results correlated to driving risk as well as provide mobility counseling. Referral to these types of health professionals may actually be a more widely available option in many communities.

- Private driving schools and driving education programs may be available in the local area.

However, they may not have expertise in evaluating older adults with medical impairments.

- Further evaluation by another health professional such as a geriatrician, neurologist, psychiatrist, or neuropsychologist can be considered for an older adult who has a chronic condition such as Alzheimer disease or an episodic acute illness (e.g., seizure disorder).
- If changes in driving behavior are likely to improve the older adult's driving safety (e.g., avoiding driving at night, rush hour, adverse weather conditions, etc.), the clinical team member can make recommendations. However, officially, state policies vary in the area of restrictions. Strict adherence to these policies can be made a condition for licensing through the state licensing agency or medical review board. State policies should be checked before making these recommendations. It also has to be acknowledged that the research literature on the benefits of license restriction is not clear. In general, when possible, it is generally better to lean toward driving autonomy with license restriction, but if there are concerns that the older adult would not honor the restrictions then driving cessation may be the best option.

If the older adult's driving safety is an urgent concern, the clinician may wish to report to the state licensing agency, which will have steps to follow that may include a state driving assessment. Depending on the particular state's reporting laws, physicians may be legally responsible for reporting "unsafe" drivers to the state licensing agency. (For a discussion of the legal and ethical issues, see Chapter 7; for a list of state licensing agencies and other resources on state laws, see Chapter 8.) The older adult should be made aware of the referral/report to the state licensing agency, which should be documented and also offered to the older adult in writing. This may place the clinical team member in a difficult position. Many states require physicians to fill out forms that require medical information and vision testing results and to provide an opinion on whether the driver should undergo visual and/or on-road testing.

Regardless if the older adult has no medical contraindications to continued driving, he or she should be offered education and handouts such as the Ten Tips for Aging Well and Safe Driving Tips (available in this guide). All older adults should be encouraged to develop a transportation plan, and to become familiar with and able to successfully access alternative forms of transportation. Planning ahead is invaluable to support aging in place while bridging short- or long-term disruptions in the most common and familiar form of transportation—the personal vehicle.

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CHAPTER 6 ADVISING THE OLDER ADULT ABOUT TRANSITIONING FROM DRIVING

KEY POINTS

- Driving decline happens slowly, so older adults and family members may have already adapted and adjusted to minimize driving risks.
- Health care providers should proactively/annually screen frail older adults for driving safety to establish a pattern over time.
- Health professionals are encouraged to have a transportation planning discussion before an older adult is facing imminent loss of the privilege to drive.
- When an older adult is unsafe to drive, he or she and their caregivers should review the assessment and conclusions and discuss alternative transportation options; this should be documented in the older adult's health record.
- If an older adult who is unsafe to drive continues driving, caregiver responsibility and intervention (when available) is important to document. A "do not drive" prescription may be provided to the older driver and, if appropriate, the caregiver. Clinicians should also be aware of their state mandatory reporting laws and process to report unsafe drivers to the licensing authority, if permissible under state guidelines.
- Ideally, clinicians will know referral sources (gerontological care managers, social workers, driving rehabilitation specialists, and local Agencies on Aging) in the community that can provide accessible/affordable mobility counseling and information on local transportation alternatives, with the goal to make transportation opportunities available for all.
- All clinicians must "emphasize the need for counseling to be personalized. Older drivers vary in their openness to discussing driving and their preferences for when and with whom to have such conversations."[1]

You continue to provide care for **Mr. Phillips'** *chronic conditions and follow up on his driving safety. Mr. Phillips has gradually decreased his driving over the years. 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 now believe it is no longer safe for him to drive, and you advise him that it is time to stop driving completely. You also feel that because of the fixed nature of his deficits (longer than 6 months since the event), driver rehabilitation is unlikely to improve his driving safety. Mr. Phillips replies, "We've talked about this before, and I figured it was coming sooner or later." He believes that rides from family, 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.*

Mrs. Bales *was able to reduce her narcotic pain medication use with increased physical therapy and topical anti-inflammatory medication. She also stopped her alcohol use, helping her to continue driving for another 2 years. However, her early macular degeneration began to progress rapidly and is now considered severe.*

For most of us, driving is a symbol of independence and a source of self-esteem. When we retire from driving, we lose not only a form of transportation but also all the emotional and social benefits derived from driving. In primary preventive care, the transition to cessation of driving may be discussed as part of Medicare Preventative Services in the Medicare Wellness Visit. The Medicare Learning Network (detailed on https://www.cms.gov/Medicare/Prevention/PrevntionGenInfo/medicare-preventive-services/MPS-QuickReferenceChart-1.html [accessed April 2019]) provides educational products and information to proactively address health conditions that may adversely affect driving ability.

Advance planning for driving cessation ideally will be reviewed along with other standard instrumental activities of daily living in primary prevention. In secondary prevention, referral to the clinical team can assist with anticipation of and preparation for driving cessation,[2] rather than responding abruptly in an acute need. It is strongly recommended that older adults explore and utilize a variety of local alternative transportation options well in advance of need so that if/when the time comes that they do need to rely on other transportation options, they have experience and realistic expectations already in place.

For various reasons, clinical team members may be reluctant to discuss driving cessation with older adults. Clinicians may fear delivering bad news or be concerned that the older adult will lose mobility and all its benefits. Clinicians may also avoid discussions of driving altogether, because they believe that an individual will not heed their advice or become angry. Clinicians may be concerned about losing an individual to another practice.

These concerns are all valid. However, clinical team members have an ethical and, in some states, a legal responsibility to protect the safety of the older adult, as well as that of the public, through assessing driving-related functions, exploring medical and rehabilitation options to improve driving safety, and when all other options have been exhausted, providing recommendations for restriction or cessation of driving. Within the clinical team, primary clinicians are often considered key for driver licensing and assessment referral. In tertiary preventive care, when it is clear to the clinical team that an older adult driver must stop driving, the team must manage such challenging cases, including encouraging the older adult driver to involve caregivers in creating a transportation plan and obtaining the older adult driver's permission when involving his or her support system.

USEFUL STEPS IN COUNSELING OLDER ADULTS TO STOP DRIVING

Begin with the Older Adult's Perspective

An initial assessment of the older adult's perception of his or her driving ability often directly influences the process in which a person redefines not only personal mobility but also public risk. Reviewing the self-perceived driving skills of the older adult is critical in any discussion regarding driving cessation. Clinicians and caregivers must acknowledge that their goals may be very different from those of the older adult. In addition, within this later stage of life, "individuals vary in their functional abilities, lifestyle, personal resources, and attitudes."[3] Driving cessation stress often directly creates an identity change, challenging how one thinks of himself or herself, not as a driver, but as an "old person."[4] Older adults' self-assessments suggest they may over-estimate personal driving competences. Longstanding character appraisal may bias older adults toward objectively acknowledging their safety risk.[5] The older adult's individual insight, self-determination, confidence, autonomy, and

relatedness to social activity require understanding by the clinical team.

Utilize Clinical Practice Tool: Assessment of Readiness for Mobility Transition (ARMT)

Consider the ARMT, for use by social service, health, and transportation professionals when assessing older clients and intervening to promote individualized planning. The ARMT is based on multiphase, qualitative-quantitative research effort to identify and measure key individual differences that define the construct of readiness[6] to discontinue driving. In addition, the ARMT may assist in the identification of health changes in the older adult and individualize the driving retirement discussion[7] (detailed on www.umsl.edu/mtci/PDFs/ARMT%20Manual%208-11.pdf [accessed April 2019]).

Assess Family/Caregiver Readiness for Mobility Transition

Whenever available, there is no substitute for critical caregiver support in developing plans for driving cessation. It is important early on to determine whether the older adult has any caregivers who can support this transition. Of note, if the primary care provider recommends an older adult retire from driving, the older adult often takes this advice.[8] For a planned transition from driving by the clinical team to be successful, caregiver buy-in to a unified position and support is critical. It is very difficult to successfully counsel older adults to stop driving if their caregivers wish them to continue operating a motor vehicle or disagree among themselves.

Remember that an involved caregiver, if present, is the one constant and consistent member of the "team." Education of caregivers may increase informed decision-making and prevent plan-of-care errors.[9] When no caregiver support is available, it is very important to engage local resources through community agencies such as Area Agencies on Aging to provide additional services.

Utilize a Clinical Team

Clinical teams require skill sets, assessment instruments, and an appreciation of age-related driving retirement challenges. Because driving cessation involves so many aspects of the older adult's coping style and physical and mental health, the availability of social support and a clinical team sensitive to age-related mobility change is critical to address multiple needs and direct an intervention plan.[10]

Develop Clinical Team Communication

Clinical teams concur that concise communication is both fundamental and one of the most challenging aspects of good care during a transition process. Cultural heritage must be acknowledged and respected in decision-making, because a lack of understanding may prevent the older adult from requesting clarification. Older adults with compromised health literacy may agree with the clinician in an effort to maintain their dignity, even when they do not fully understand medical terminology.[11]

Explain the Importance of Driving Cessation

If the older adult driver has undergone the CADReS toolbox assessments (see Chapters 3 and 4) or assessment by a driver rehabilitation specialist, results in simple language should be provided to the older adult driver and his or her caregivers to share and discuss. Results must be clearly explained, including the intended needs of the older adult and what the findings indicate about the older adult driver's level of function and why this function is important for driving. The potential risks of driving should be stated, ending with the recommendation that the older adult stop driving.

This might be a good time to discuss the older adult driver's thoughts or feelings, especially if he or she were to cause a vehicle crash. If the older adult should not drive, the clinical team might discuss issues related to injury, public safety, and/or financial liability. This discussion should be put in writing with copies given to the older adult driver. If the older driver lacks decision-making capacity, a copy must be given to a family member or caregiver.

> **"Mrs. Bales,** *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, bicyclists, and traffic signs. With your vision becoming severely impaired, I'm concerned you'll be in a car crash. Because your visual deficits from your macular degeneration 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 that, unfortunately, you no longer meet."*

Older adult drivers may become upset or angry at the clinical team's recommendation to curtail driving. These feelings must be acknowledged, and although clinicians should be sensitive to the practical and emotional implications of driving cessation, it is necessary to remain firm with the recommendation. Engaging in disputes or long explanations should be avoided. Instead, the focus must be on making certain that the older adult understands the recommendation and that it was made for his or her safety. If the older adult driver is mentally competent and willing to allow a caregiver to be present at the visit, this may be helpful when communicating this sensitive information. All discussions should be documented in the health record. It is critical for the clinical team to reinforce, reinterpret, and follow up with the older adult driver and caregiver during this transition with the goal to think of a new framework for independence and needs at this stage of life.

Consider Dignified Approaches

Caregivers who know the older adult may identify outside factors to retire from driving, such as creating a written pro and con list allowing the older adult to see and recognize the facts. Also, putting the focus on the older adult helping another family member (child, grandchild) who needs a car more than he or she does, may help. In addition, comparing the annual car-related cost (insurance, car maintenance) with alternative modes of transportation may be a more dignified reason to stop owning a car.

Proactive Transportation Planning

It's important to encourage older adult drivers to begin to think about what to expect when their driving abilities begin to decline and to let them know that many people make the decision to restrict or stop driving when safety becomes a concern. Older adults are encouraged to take control of their future by creating a transportation plan and discussing with their family or caregivers if possible. If the individual does not have the cognitive capability for these tasks, see the section on those who lack decision-making capacity later in this chapter. As with all late life planning, preparation before the event of need, creating a driving cessation plan with transitional strategies, is necessary.

Discuss Transportation Options

Once driving cessation has been recommended, possible transportation alternatives need to be explored and discussed with the older adult. "A conditional concern is the general lack of awareness about alternative transportation options such as van

services"[12] often operated by community agencies to make transportation affordable.

Providing the older adult with resources to explore options (e.g., handouts in Appendix B) will help empower him or her to formulate a personal plan for transportation. Special mention is made of The Hartford's (The Hartford Center for Mature Market Excellence) educational guidebooks: We Need to Talk: Family Conversations with Older Drivers (https://s0.hfdstatic.com/sites/the_hartford/files/we-need-to-talk.pdf), At the Crossroads: Family Conversations about Alzheimer's Disease, Dementia & Driving (https://s0.hfdstatic.com/sites/the_hartford/files/cmme-crossroads.pdf), and You and Your Car: A Guide to Driving Wellness (http://hartfordauto.thehartford.com/UI/Downloads/You_and_Your_Car.pdf)[all accessed April 2019]).[13] Using alternative transportation options, such as buses, trains, cabs, ride-hailing services, or even walking, offers older adults independence from having to rely on others.

A discussion of driving alternatives can begin by asking if the older adult has made plans to stop driving or how he or she currently finds rides when driving is not an option. Alternative transportation methods (Table 6.1) should be explored, as well as any barriers the older adult foresees (e.g., financial constraints, limited service and destinations, required physical skills for accessibility, rural community, living out of the mainstream). Discussing the economic impact of owning and maintaining a vehicle may be an important detail for the older adult. The funds currently used toward owning a vehicle will be available for alternative transportation options.

The older adult may need assistance to develop a transportation plan that identifies his or her most feasible transportation options, because certain cognitive and physical skills are often necessary to safely use common transportation alternatives, such as the bus. The importance of planning for social activities, which contribute to quality of life, should be stressed. Helpful resources addressing transportation include Area Agency on Aging and/or the Alzheimer's Association. For information on local resources such as taxis, ride-hailing services, public transportation services, and senior-specific transportation services, contact The Eldercare Locator (1-800-677-1116, www.eldercare.gov/ [accessed April 2019]; be prepared to provide the relevant city and state) which can provide connections to senior services nationwide. This might be a good time to refer to clinical teams, including a social worker, occupational therapist, nurse, or a gerontologic care manager. The team may be aware of alternative modes of transportation and/or may deal with the older adult's feelings of social isolation or depression.

Older adults should be encouraged to involve caregivers and supportive friends and to form a social network in creating a transportation plan. The older adult's permission should always be obtained when involving others, who would be encouraged to offer rides and formulate a weekly schedule for running errands. However, the older adult must be included when caregivers are also included in the discussion. Help in arranging for delivery of prescriptions, newspapers, groceries, and other services may also be considered (see Table 6.2).

Reinforce Driving Cessation

Although the message to cease driving is essential for ensuring the older adult's safety, this approach also places a significant demand on the adult to change his or her current behavior. Therefore, the clinical team will need to ensure the older adult understands the reasons (legal, health, and safety) for the driving cessation recommendation. In many

cases, older adults may become argumentative or emotional during the office visit. They may not fully comprehend the recommendations or remember all the information provided, partly due to the emotions of tension and fear when anyone receives negative feedback.

The following strategies may reinforce patient education:

- Make open-ended statements, such as "Please share with me your concerns regarding the assessment and recommendations." Alternatively, "What worries you the most about not driving?" Reassure the older adult that you and the clinical team are available if he or she has questions or needs further assistance.
- Use a teach-back technique by requesting the older adult to repeat why he or she must not drive. Reinforce that this recommendation is for his or her personal safety and the safety of others on the road and may optimally reduce the amount of stress and energy to drive.
- The older adult driver may benefit from visual reinforcement of a prescription with the words "Do Not Drive." Ensuring that the older adult understands why he or she is receiving this prescription may help avoid feelings of anxiety or anger. See Table 6.3 for further reinforcement tips. This can also be helpful for the family or care providers so that they can be seen as supporters of the older adult rather than as the one telling them they cannot drive, especially if there are memory issues.
- Send the older adult a letter that recommends driving cessation (see Table 6.6 for a template). Place a copy of this letter in the health record as both documentation and another visual tool for reinforcement. The letter should be written in simple language to ensure the older adult understands the clinical team's recommendation.
- The clinical team must understand each state's reporting requirements and explain this requirement to the older adult driver and caregivers (see Chapters 7 and 8 for more details). State regulations, in the case of mandatory reporting laws, dictate that older adult drivers and possibly by proxy, their caregivers) must inform the local state licensing agency of medical conditions that could affect the older adult's safe operation of a vehicle. The older adult should be informed that the state licensing agency will follow up and advised about what to expect as part of this evaluation (i.e., a review of the driving record, a medical statement, potential on-road testing).
- In states with voluntary laws, a referral to the licensing agency could still be appropriate, and older adults may be informed that unsafe/non-compliant actions will be reported if they drive against medical advice (detailed in Chapter 7, Ethical and Legal Issues).
- Help facilitate caregiver assistance in encouraging driving cessation, and if necessary, encourage the older adult to self-report his or her impairment to the state licensing agency. It may be helpful to enlist other trusted allies, such as clergy, friends, or the family attorney.

Follow-Up with the Older Adult

At the older adult's follow-up appointment, for completeness, assess:

- The older adult's ability to comply with the driving cessation recommendation,
- Transportation resources the older adult identified and has or has not used, evaluating the viability of the chosen options,
- Signs of isolation or depression.

The assessment begins by asking the older adult how he or she got to the appointment that day.

This will help determine whether the older adult has been able to plan for and schedule transportation to and from necessary appointments. Ensure that the older adult has secured reliable and sufficient transportation resources to meet his or her needs.

Utilize the clinical team; refer to a social worker or gerontologic care manager.

Clinician: I'm pleased to see you for your follow-up appointment today. How were you able to get to the office?

Mrs. Bales: *Oh, my son dropped me off.*

Clinician: I see. Has he been driving you lately?

Mrs. Bales: Yes, ever since I stopped driving, he and his wife have been taking me where I need to go. He's going to pick me up in 15 minutes.

Clinician: How has that been working for you?

Mrs. Bales: It's worked quite well.

Clinician: I have a prescription for you to refill your medicines after our appointment. Will your son be able to take you to the pharmacy?

Mrs. Bales: Yes, that won't be a problem.

Clinician: It's wonderful that your son and daughter-in-law are a reliable source of rides for you. What do you do when they are unable to drive you where you need to go?

Mrs. Bales: I am stuck at home.

Clinician: I understand how that can be frustrating. Here is a list of some programs in our area, which are ride services, like a taxi, and your son can help you choose which one might work the best for you so you can call for a ride anytime you want.

Anguish and rumination regarding driving cessation may persist for months, resulting in a prolonged negative impact on the relationship between the older adult and family caregivers. Clinicians provide a valuable service to communicate delicately with the family caregivers the essential need to maintain a supportive connection, especially during this period with the retired driver and anticipate feelings of grief from driving cessation.[14]

In all levels of care, clinicians must be alert to signs of depression, neglect, and social isolation (see Table 6.4 and Table 6.5). It is important to continue to monitor older adults for any signs of worsening mental or physical health and to ask how they are managing without driving. Caregivers must be educated on signs of depression and asked if they have any concerns. Clinicians are encouraged to consider using formal assessments for depression such as the Geriatric Depression Scale (http://www.npcrc.org/files/news/geriatric_depression_scale_short_form.pdf) or the PHQ-9 (Patient Health Questionnaire) (https://www.phqscreeners.com/select-screener/36).

The older adult's functional or cognitive impairments should continue to be assessed and treated. If the older adult improves to the extent that he or she is safe to drive again, the individual should be notified and given the resource sheet on Tips for Safe Driving (see Appendix B).

SITUATIONS THAT REQUIRE ADDITIONAL COUNSELING

Additional counseling may be needed to encourage driving retirement or to help older adults cope with this loss. Potential situations that may arise with individuals who have difficulty coping or adhering to the recommendation to stop driving are described below.

The Resistant Older Adult Driver

If the older adult becomes belligerent or refuses to stop driving, it is important to understand why. Knowing the reason will help to address the

individual's concerns.

Be sure to listen and use supportive statements when addressing the older adult's concerns. Let the individual know you are an advocate for his or her health and safety.

Remember that driving cessation can have severe emotional and practical implications, and older adults may have a difficult time adjusting. It is also important to remember that driving is more than a mode of transportation for baby boomers.[15,16] This segment of the population grew up with the automobile as their method of social networking,[15,16] so giving up their car needs to be approached the same as other losses. It is often about more than getting to where they need and want to go.

Asking the older adult driver to define when a person would be unfit to drive may help the individual better recognize impairment in his or her own driving capabilities, as well as provide an opportunity to assess his or her judgment and insight. In addition, it might open up discussion to reach some common ground.

Many older adult drivers are able to identify peers whose driving they consider unsafe, yet may not have the insight to recognize their own unsafe driving habits. It can be helpful to ask older adults if they have friends with whom they are afraid to drive and why. Older adult drivers should be encouraged to obtain a second opinion if they feel additional consultation would be helpful.

In addition:

- Help the older adult driver identify support systems. Ask him or her to list family members, faith communities, neighbors, etc., who are able and willing to help with transportation. This may help the older adult driver become aware of a supportive network and feel more at ease when searching for alternative transportation.
- Assist the older adult driver to consider 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, such as "losing independence" or "giving up freedom." Help the older adult driver 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 older adults can still stay connected by requesting rides from caregivers and using community services. It may be helpful to point out that the older driver has quite likely been giving rides to others throughout his or her driving career, and others may now be allowed to return the favor. Another positive is that expenses will be lower without the financial responsibility of maintaining a vehicle. Help older adult drivers calculate the expenses (licensure, registration, insurance, maintenance, parking, etc.) they will no longer have to pay for compared with the cost of alternative transportation. This exercise may help them see the monetary value in driving cessation.
- Refer the older adult driver to a social worker or clinical team member. Older adult drivers may need additional help in securing resources and transitioning to a life without driving. Social workers often provide supportive counseling to older adults and caregivers, assess the individual's psychosocial needs, assist in locating and coordinating community services and transportation, and enable older adults 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 local social workers who have met national, verified, professional standards for education, experience, and supervision. Information may

be ordered and the online register accessed at www.helpstartshere.org/find-asocial-worker. Local hospitals are another resource for social workers, and referral sources include the Area Agency on Aging or the Alzheimer's Association.

- Some areas offer public transportation training for seniors. If this is offered in the older adult's area, a recommendation to participate may be helpful.

The Older Adult Driver with Symptoms of Depression

As noted, "decreased life satisfaction, and less productive engagement in life can result from DRC"[17] (driving reduction and cessation). Depression may occur from a combination of factors such as diminished health, social isolation, and feelings of loss. An older adult driver suspected of being depressed and resulting in bereavement (see Table 6.4) should be fully assessed to determine the most appropriate treatment. Older adults and caregivers should be educated about symptoms of depression and available treatment options. Referring the older adult to individual or group therapy, and/or to social/recreational activities may be considered. Pharmacologic treatment or referral to a mental health professional may also be appropriate. It is important to acknowledge that the older adult has suffered a loss due to driving cessation and recognize that this may be an especially difficult time for him or her.

The Older Adult Driver Who Lacks Decision-Making Capacity

When the older adult driver has significant cognitive impairment and/or lacks insight or decision-making capacity (e.g., in certain cases of dementia, stroke, etc.), it is imperative to obtain the help of the caregiver, surrogate decision-maker, or guardian, if available. Caregivers play a crucial role in encouraging the older adult to stop driving and to help the individual find alternatives. Clinicians should inform caregivers that the clinical team would support and assist their efforts in any way possible.

In rare instances, it may be necessary to appoint a legal guardian for the older adult. In turn, the guardian may forfeit the older adult's car and license on behalf of the individual's safety. These actions should be taken only as a last resort. From a practical standpoint, hiding, donating, dismantling, or selling the car may also be useful in these difficult situations.

The Older Adult Driver Who Shows Signs of Self-Neglect, Neglect, or Abuse

Older adults may be unable to secure resources for themselves and may be isolated, lacking sufficient support from family, friends, or an appointed caregiver. If the older adult does not have the capacity to care for his or herself, or caregivers are unable to provide adequate care, signs of neglect or self-neglect (see Table 6.5) may be evident.

If neglect or self-neglect are suspected, Adult Protective Services (APS) should be involved. Neglect is the failure of a caregiver to fulfill his or her caregiving responsibilities, whether because of willful neglect or as a result of disability, stress, ignorance, lack of maturity, or lack of resources. Self-neglect is the inability to provide for one's own essential needs. APS will investigate for neglect, self-neglect, or abuse of the older adult. 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. Contact information for each state office can be obtained by calling the Eldercare Locator at 800-677-1116.

Table 6.1. Transportation Alternatives

■ Walking
■ Train/subway
■ Bus
■ Taxi/ride-hailing services
■ Family and friends
■ Community transportation services
■ Hospital shuttles
■ Medi-car
■ Delivery services
■ Volunteer drivers (e.g., church, synagogue, temple, mosque, community centers)
■ Private for-profit senior care services
■ Rides in Sight (www.ridesinsight.org, call toll-free 855-607-4337)
Rides in Sight is a free transportation referral service that assists individuals in finding a transportation program that fits their specific needs in the older adult's area. They can be found online or by phone during business hours.

Table 6.2. Family/Caregiver Assistance

■ Encourage family members and caregivers to promote the health and safety of the older adult by endorsing clinician recommendations and assisting in securing needed transportation.
■ Include caregivers in the mobility counseling process.
■ Provide resources to caregivers.
■ Provide copies of the How to Assist the Older Driver resource sheet (Appendix B).
■ Look for signs of caregiver burnout.
■ Keep the communication door open to caregivers.
■ In the case of cognitive impairment when it is believed the older adult driver does not have decision-making capacity (e.g., lack of insight), communication with a family member or caregiver to reinforce recommendations is imperative.
■ Recognize that if family members or caregivers depend on the older adult driver for transportation, the situation may require more time, counseling, and support to meet everyone's needs.
■ Be attentive to the changing needs of the older adult and caregiver.
■ Offer to have a family member "stop by" on a set schedule for a set time period with his or her vehicle and be available to assist with any transportation needs the older adult may have. This will eliminate the need for the older adult to ask for a ride to the bank or market and allow them to plan ahead.

Websites (all accessed April 2019)

AAA Long Road Senior Cohort Study
(https://aaafoundation.org/resources/)
Online free resources to help older adults assess personal driving readiness, and resources to make informed choices.

AAA Senior Driving (https://seniordriving.aaa.com/)
This website, a AAA product, is intended to provide users with general information to help them better understand the traffic safety implications of certain health conditions and human behaviors as we get older.

Alzheimer's Association
(www.alz.org/care/alzheimers-dementia-and-driving.asp)
The Alzheimer's Association provides links to driving counseling support for caregivers.

American Occupational Therapy Association
(https://www.aota.org/Practice/Productive-Aging/Driving.aspx)
Locate an occupational therapist able to conduct driving assessment and locations by ZIP code.

Centers for Disease Control and Prevention
(CDC) MyMobility Plan (https://www.cdc.gov/motorvehiclesafety/older_adult_drivers/mymobility/index.html)

MyMobility Plan provides general guidance for older adults seeking to maintain both individual and community mobility.

Family Caregiver Alliance (www.caregiver.org)
This organization supports and sustains the important work of families nationwide caring for adult loved ones with chronic, disabling health conditions.

Health in Aging Foundation
(www.HealthinAging.org)
This Foundation was established by the American Geriatrics Society to bring the knowledge of geriatrics healthcare professionals to the public, with a wide range of resources.

National Aging and Disability Transportation Center
(www.seniortransportation.net)
Works to increase transportation availability for older adults, individuals with disabilities, and caregivers.

National Association of Area Agencies on Aging
(www.n4a.org/about-n4a)
Area Agencies on Aging are a leading aging issues resource providing specific regional services.

National Association of Social Workers
(http://www.helpstartshere.org)
Locate a social worker by ZIP code.

National Council on Aging NCOA
(https://www.ncoa.org/)
Review NCOA assistance on healthy aging, financial security and more for professionals, older adults, caregivers, and supporters.

National Highway Traffic Safety Administration
(https://www.nhtsa.gov/road-safety/older-drivers)
NHTSA's priorities are to reduce the number of deaths and injuries by preventing traffic-related crashes or mitigating risks of serious injuries associated with traffic-related crashes. This includes addressing behaviors of drivers, pedestrians, and cyclists in relation to one another and addressing vehicle safety issues. NHTSA's Older Drivers site offers downloadable materials and short video clips that clinicians can offer their patients and families to help them understand how aging can affect driving and what an older driver or caregiver can do to continue driving safely with age, such as adapting a vehicle to meet specific needs. See also, "Talking With Older Drivers About Safe Driving," intended to provide users with general information to help them better understand the traffic safety implications of certain health conditions and human behaviors as we get older.

National Volunteer Transportation Center
(www.NationalVolunteerTransportationCenter.org)
The National Volunteer Transportation Center was created to support existing and emerging volunteer transportation programs and services across the country.

Rides in Sight (https://www.ridesinsight.org/)
A national non-profit transportation system supported by Independent Transportation Network America dedicated to helping find transportation alternatives. This service is membership-based; people 60 and older and visually impaired adults are eligible to join.

Table 6.3. Tips to Reinforce Driving Cessation

- Give the older adult and caregiver a written prescription that states: "Do Not Drive, For Your Safety and the Safety of Others." This acts as a reminder for the older adult and emphasizes the strength of your message.
- Remind the older adult that this recommendation is for his or her safety and for the safety of other drivers.
- Ask the older adult driver how he or she might feel if he or she were to get in a crash and injure himself, herself, or someone else.
- Point out the economic advantages of not having a car, which will eliminate many expenses, including gas, maintenance (oil changes, tires, and tune-ups), insurance, registration/license fees, financing expenses, and depreciation of the car's value.
- Have a plan in place that involves caregiver support for alternative transportation.

Table 6.4 Questions to Assess for Major Depressive Disorder (adapted from DSM-5)[18]

These questions are concerning most of the day or nearly every day and are not related to another medical illness.

- Has your mood been sad, empty, or hopeless?
- Have you lost enjoyment in all or most activities?
- Have you noticed any weight changes?
- Have you noticed any changes in sleeping habits or concentration?
- Have you noticed a lack of energy or slower movement?
- Have you noticed feelings of worthlessness or recurrent ideas of death?

Table 6.5 Signs of Neglect, Self-Neglect, or Abuse in Older Adults

- 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

Table 6.6 Sample Letter

January 23, 2019
Mr. Clayton Phillips
123 Lincoln Lane
Sunnydale, XX 55555

Dear Mr. Phillips:

I am writing to follow-up on your clinic visit of January 5, 2019. You will recall we talked about your driving safety. I tested your vision (eyes), strength, movement, and thinking skills, and reviewed your health problems and medicines. I recommended you stop driving because of your poor vision, muscle weakness, and slowed reaction time.

I know that driving is important to you, and I know it is hard to give up. However, your safety is more important. To help you get around, your son and your friends have offered to help you. You may also use the public transportation system in your neighborhood. Alternatively, please consider Rides in Sight (www.ridesinsight.org). Rides in Sight will assist you with your individual specific needs in your neighborhood. You may search online or call toll free (1-855-607-4337); a person will answer during business hours. The handout How to Assist the Older Driver (enclosed) has some other ideas we talked about. I am also sending a copy of these materials to your son so that 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.

In a state that has mandatory reporting, consider adding:

As we discussed, the state of (state name) requires me to notify the state licensing agency of people who have medical conditions that might affect driving safety. Because I am required by law to do this, I have given your name to the _ (state name) licensing agency. The licensing agency will send you a letter in a few weeks to discuss your driver's license.

In a state that has voluntary reporting, consider adding:

It is very important that you do not drive, because you are putting yourself and the public at risk. If you continue to drive, I will need to submit your name to the state licensing agency 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,
Physician

Enc: How to Assist the Older Driver

cc: Son's name

Note: The sample letter in Table 6.6 has been written at an average 9th grade level. It should be easily understood by 14- to 15-year-olds according to Flesch-Kincaid Readability www.webpagefx.com/tools/read-able/flesch-kincaid.html (accessed April 2019).

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CHAPTER 7 ETHICAL AND LEGAL ISSUES

KEY POINTS

- Laws, regulations, and policies vary not only by state but also by local jurisdiction and are subject to change. Healthcare professionals should seek legal advice on specific issues or questions.[1,2]
- It is important to know and comply with state requirements to avoid being subject to a third-party lawsuit.
- Some states (CA, DE, NJ, NV, OR, PA) have mandatory reporting requirements that may give rise to liability for failure to report.
- The ethical responsibility to maintain patient confidentiality as well as the ethical responsibility to public safety is not limited to physicians; all healthcare professionals have the same obligation.
- Patient permission should be obtained before contacting caregivers, and this should be documented in the patient's health record. If the patient maintains decisional capacity and denies permission, his or her wishes must be respected.

Mrs. Allen, *a 78-year-old woman, is accompanied by her daughter, who reports that her mother 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. On previous visits, you have recommended that she consider alternatives to driving. The daughter would like to know how to manage her mother's long-term safety and health, and especially how to address the driving issue.*

This chapter provides a general overview to assist clinicians to understand the process, including their ethical and legal responsibilities, for reporting unsafe drivers to their state licensing agency. Although some of the issues addressed are inherently ethical and/or legal, this chapter is not to be construed as providing 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 the National Highway Traffic Safety Administration or the American Geriatrics Society and do not replace local legal advice and review of state laws and local statutes. It is important for physicians and other healthcare providers to seek legal advice in their state on specific issues or questions that may arise with an individual patient.

Older adults receive services in multiple settings from all types of professionals, including all members of the clinical team (medicine, nursing, pharmacy, social work, occupational therapy,

psychology, etc.). Most existing legal guidance for older adult drivers refers specifically to physicians, although all clinical professionals have similar ethical duties and obligations. The following discussion therefore specifically cites physicians in most instances, but the principles discussed should be adopted by the entire clinical team.

Clinician: **Mrs. Allen**, *I understand you drove yourself to the appointment today. This worries me. At our last visit, I recommended you retire from driving. Please share the reason you drove here today.*

Mrs. Allen: Well, I don't understand why you're so concerned. I've never gotten into a car crash. My driving is fine and, frankly, I don't think you have any right to tell me not to drive.

Clinician: 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 healthcare provider, that is my primary concern. I want to help make this easier for you. Your Rapid Pace Walk (15 seconds) and MoCA test results (score 18/30) show that your responses are not as sharp as they need to be for you to drive safely. Let's talk about some of your concerns regarding retiring from driving.

Laws, regulations, and policies vary not only by state but also by local jurisdiction. They are also subject to change, and the state licensing agency should be contacted for the most up-to-date information. For a state-by-state list of licensing agency contact information and additional resources for locating licensing requirements and renewal criteria, reporting procedures, etc, see Chapter 8.

Clinician: **Mrs. Allen**, *when do you think it's an appropriate time for a person to stop driving?*

Mrs. Allen: I suppose when they drive unsafely or are a threat to others on the road.

Clinician: That is an excellent observation, and I would agree with you.

Mrs. Allen: 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.

Clinician: That is indeed a scary situation for your friend and others on the road, too. It's great that you're aware of the potential danger and know how to ensure your own safety. I'm wondering if there's someone you trust who would tell you when they thought it was unsafe for you to continue driving?

The case studies in this chapter serve to illustrate the range of opinions in attempting to fairly define the scope of the clinician's responsibility to report age impaired drivers. In addition, they consider society's efforts to provide a safe environment for its citizens.

On further evaluation, you diagnose **Mrs. Allen** *with Alzheimer disease. It is readily apparent that her condition has progressed to the extent that she can no longer drive safely and that rehabilitation is not likely to improve her driving. You tell Mrs. Allen that she must stop driving for her own safety and that of others on the road. You also explain that the state reporting laws instruct physicians to notify the licensing agency of medically unsafe drivers. Initially, Mrs. Allen does not understand 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 state licensing agency but is now concerned that her mother will encounter problems if she attempts to drive without a license. Mrs. Allen's daughter asks if it is absolutely necessary for you to report her mother. What do you say?

Many physicians are uncertain of their legal responsibility, if any, to report unsafe drivers to their state licensing agency.[3,4] A survey of geriatric physicians in the United states, discovered 31.8% were ignorant of state guidelines regarding reporting at-risk drivers.[5] The situation is further complicated by the risks of damaging the clinician-patient relationship, violating patient confidentiality, and potentially losing patients.[4,6] As a result, clinicians are often faced with a dilemma: should they report the unsafe driver, or should they forego reporting and risk being liable for any potential patient or third-party injuries for failing to report? Furthermore, how should clinicians engage caregivers to lessen the burden of a driving restriction or cessation?

ETHICAL DUTIES

Current legal and ethical debates highlight duties of the physician that are relevant to the issue of driving. These include the duties to protect patient health as well as maintain patient confidentiality.

Duty to Protect

The Patient: Protecting the patient's physical and mental health is considered the clinician's primary responsibility. This includes not only treatment and prevention of illness but also caring for the patient's safety. Clinicians should advise and counsel patients about medical conditions and possible adverse effects from medication that may impair the ability to drive safely and document this discussion in the medical record. Some states have mandatory reporting requirements that may give rise to both civil and criminal liability for failure to report.[7] For example, wording in the Pennsylvania law has led the Pennsylvania state licensing agency to conclude 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 providers who do not comply with their legal requirement to report may be convicted of a summary criminal offense."[8] Case law illustrates that failure to advise patients about such medical conditions and adverse effects of medication can be considered negligent behavior, making the physician liable for monetary damages.[9]

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.[10,11] This is termed third-party liability. In certain states, physicians have been found liable for third-party injuries because they failed to advise their patients about medical conditions, adverse effects of medication, or medical devices that may impair driving performance.[12–14]

Generally, American civil law does not impose liability on parties for failing to aid or rescue other parties. According to The Restatement (Second) of Torts § 314 (1965): "The fact that the actor realizes or should realize that action on his part is necessary for another's aid or protection does not of itself impose upon him a duty to take such action."[15] However, physicians have had an ethical mandate to protect the public from dangerous patients for

decades. In the case of Tarasoff v. Regents,[16] the California Supreme Court recognized the right of a third party to sue if a health professional did not warn of an imminent threat. The ruling applies only in California but has been cited across the nation. The Tarasoff doctrine states that the most important consideration is the existence of a foreseeable threat. So if a physician believes or predicts that a person in treatment is likely to inflict serious bodily harm on a third party who can be reasonably identified, then he or she has a duty to warn or protect that potential victim.[17]

Maintain Patient Confidentiality

Patient confidentiality is the right of an individual to have personal, identifiable medical information kept private. These protections are found in the federal Health Insurance Portability and Accountability Act of 1996 (HIPAA).[18] All healthcare professionals have a legal duty to protect private patient information from disclosure to anyone, including the patient's family, attorney, or the government, without authorization from the patient.[19-21]

HIPAA encourages the free exchange of information between the healthcare professional and the patient, allowing the patient to describe symptoms for diagnosis and treatment. Individuals may be less likely to seek treatment, disclose information for effective treatment,[22] or trust the healthcare professional unless confidentiality is ensured.[19]

However, nondisclosure requirements are not absolute. There may be public policy reasons to breach confidentiality, such as removing unsafe drivers from the road.[4,23] Thus, patient confidentiality may not necessarily protect the physician from a third-party legal action in the impaired driver situation.[23,24]

Some states do not provide immunity for physicians who warn a government agency about an individual who has become an unsafe driver. In those states, it is important to document the following:[25]

- An assessment regarding the ability of the patient to drive a motor vehicle.
- An assessment of the specific danger posed by the patient's driving to other individuals on the highway.
- Attempts made to contact patient's family members[26] or guardian, including the content of the conversation and the means used to make contact.

Other Healthcare Professionals: The ethical responsibility to maintain patient confidentiality is not limited to physicians; all health care professionals have the same obligation.[27,28] Patient confidentiality is crucial within the health care professional–patient relationship, because it encourages the free exchange of information allowing the patient to describe symptoms for diagnosis and treatment.[19] Without belief that their care is confidential, patients may not trust their health care professional and, thus, be less likely to disclose information for effective treatment.[19] However, just as with physicians, this responsibility, is not absolute.[20,29] A good example of health care professional standards for the treatment of older adult patients can be found on the website of the American Society of Consultant Pharmacists (https://cdn.ymaws.com/www.ascp.com/resource/collection/28D69F2D-18D9-4EF8-A086-675AB7E4ECD8/Quality_Standards_and_Practice_Principles_for_Senior_Care_Pharmacists.pdf) [20]

CONCERNS ABOUT REPORTING

A Canadian study explored physicians' attitudes on medical fitness to drive and found that although most medical professionals would report unfit drivers, they believed such action could adversely affect the confidentiality expectations within the

physician-patient relationship.[24,30] Physicians have raised concerns about mandatory reporting, stating it can violate privacy, compromise the ability to counsel patients, and negatively impact the physician-patient relationship.[24,31] Some physicians have suggested that mandatory reporting has the potential to discourage patients from seeking health care.[3,32]

In the six states that have mandatory reporting requirements (California, Delaware, Nevada, New Jersey, Oregon, and Pennsylvania), studies show physicians are more likely to report.[33] Unless required by law to report, clinicians may choose not to do so.

Immunity and Confidentiality

NHTSA's Highway Safety Program Guideline No.13 - Older Driver Safety[35] recommends that states enact policies or regulations that protect clinicians. The AAA Foundation for Traffic Safety report Driver Licensing Policies and Practices provides a list of states that currently have laws in this area which medical providers can use to look up their own state regulations.[36]

Adherence to State Reporting Laws

Each state has its own reporting laws. For a state-by-state listing of licensing agency contact information and other resources for licensing requirements, see Chapter 8. Note that information may change over time, and the state licensing agency should always be contacted for the most up-to-date information.

In states without laws mandating physicians to report patients to the state licensing agency, physicians should have written patient releases that comply with HIPAA before disclosing medical information. In these states, physicians who disclose medical information without patient authorization may be liable for breach of confidentiality. However, failure to disclose may make the physician liable to third parties who are injured by the patient.[13] This presents a "take it or leave it" Hobson's choice,* but ultimately safety of the patient and the public should come first.

BALANCING ETHICAL AND LEGAL RESPONSIBILITIES

Balancing competing ethical and legal duties can be problematic. The following strategies may be helpful.

Counsel Patients and Caregivers

Patients should be advised of medical conditions, medications, medical devices, and procedures that may affect driving performance. (For a reference table of such medical conditions and medications, with recommendations for each, see Chapter 9.) If the patient gives permission, his or her caregivers should be involved in the counseling process whenever appropriate. Caregivers included in the process are more likely to assist the patient with the changes a loss of license will bring. Losing one's driver's license has significant psychological consequences, because the ability to drive is inexorably intertwined with the sense of independence.

Driving cessation has other major consequences besides loss of autonomy. The older adult's ability to conduct the business of daily living is impaired, as is his or her ability to participate in social activities or volunteering. Therefore, social isolation is likely. Caregivers are also negatively impacted, because they are expected to fill in many of the gaps that

*Thomas Hobson (circa 1544–1630) kept a stable and required every customer to take either the horse nearest the stable door or take no horse at all.[37] Thus, a "Hobson's Choice" is given to one asked to choose between two undesirable alternatives.

will inevitably arise as a result of the older adult's driving cessation. These risks need to be recognized and weighed versus the concerns of public safety.

If the older adult does not have decision-making capacity (e.g., due to Alzheimer disease), this information should be given to a surrogate decision-maker.

Recommend Driving Cessation

As discussed in previous chapters, clinicians should recommend driving cessation for patients believed to be unsafe drivers who have a condition(s) likely to affect driving safety but unlikely to improve with available medical treatment or with an adaptive device or technique. As always, clinical judgment should be based on the older adult's driving abilities and not on age per se. This recommendation should be documented in the patient's health record, and the clinician's office should have a system to check on compliance with recommendations.

Know and Comply with State Reporting Laws

Clinicians must know and comply with their state's reporting laws (see Chapter 8). Clinicians who fail to follow these laws may be liable for patient and third-party injuries and could face civil or criminal charges as well.

In states that have a mandatory medical reporting law, the state licensing agency's official form should be used to report the required medical conditions. In states that have a voluntary medical reporting law, the state licensing agency's official form can be used or other similar forms. Some states provide civil immunity if professionals report in good faith. Patient consent, if any, should be documented. If the state licensing agency's guidelines do not indicate what patient information must be reported, only the minimum information necessary to show that the patient may be an unsafe driver should be provided.

Reduce the Impact of Breaching Patient Confidentiality

In adhering to state reporting laws, clinicians may need to breach patient confidentiality, as is true for several other medical conditions commonly reported to state and local health departments. However, several measures can be taken to reduce the impact on the clinician-patient relationship.

Inform the Patient of Notice to the State Licensing Agency: Before reporting a patient to the state licensing agency, clinicians should inform the patient of their intent and explain that it is the ethical, and in some cases, legal responsibility of the clinician to make the report. Describing the kind of follow-up that can be expected from the state licensing agency is also advised. The patient should be assured that out of respect for his or her privacy, only the minimum information required will be disclosed and that all other information will remain confidential. When submitting a report to the state licensing agency, only the minimum information necessary (or required by the reporting guidelines) should be provided to establish that the patient may be unsafe to drive.

Even in states that offer anonymous reporting or reporter confidentiality, being open and honest with patients is a good idea. It may help to remind patients that the physician does not determine whether they are licensed to drive and that this decision is ultimately made by the state.

Providing patients with as much information as possible, perhaps including a copy of the state licensing agency report, can involve them in the process and give them a greater sense of control. In addition, patient permission should be obtained

before contacting caregivers, and this should be documented in the patient's health record. If the patient maintains decisional capacity and denies permission, their wishes must be respected.

Document Diligently: All efforts to assess and maintain the patient's safety and that of the public should be documented in the patient's health record. In the event of a patient or third-party crash injury, good documentation may protect the clinician from civil liability.

Clinicians should protect themselves legally by documenting their efforts, discussions, recommendations, and any referrals for further testing in the patient's health record.[38] In other words, all the steps performed in the Plan for Older Drivers' Safety (PODS) (see Chapter 1) should be documented, including:

- Any direct observations of the patient's functional status or red flags as described in PODS. Driving history that leads the clinician to believe that the patient may be at risk of unsafe driving should also be documented.
- 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 the patient's driving-related functions (e.g., documenting that the patient has undergone the Clinical Assessment of Driving Related Skills (CADReS); include the CADReS scoring sheet in the patient's health record).
- Any medical interventions and referrals that have been made to improve the patient's function, as well as any repeat testing to measure improvement.
- A copy of the driver rehabilitation specialist (DRS) report if the patient has undergone driver assessment and/or rehabilitation.
- The clinician's recommendation on whether the patient should continue driving or cease driving. In the case of a cease driving recommendation, a summary of 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," "reported patient to state licensing agency with patient's knowledge") should be included. Copies of any written correspondence should also be included in the patient's health record.
- Follow-up for degree of success in using alternative transportation options and any signs of social isolation and depression, including any further interventions, such as referral to a social worker, geriatric care manager, or mental health professional.

ADDITIONAL LEGAL AND ETHICAL CONCERNS

Other particularly challenging situations may arise. The following examples provide some possible actions that may be used as a guide.

Situation 1: The patient threatens to sue if he or she is reported to the state licensing agency.

- A patient's threat to sue should not deter the clinician from complying with state reporting laws. If a patient threatens to sue, clinicians can take several steps to protect themselves in the event of a lawsuit:
  - Know if your state has passed legislation specifically protecting healthcare professionals against liability for reporting unsafe drivers in good faith (see Chapter 8).[28]
  - Understand that even in the absence of 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 the reasons for believing that the patient is an unsafe driver have been clearly documented.

■ Be aware that clinician-patient privilege does not preclude the clinician from reporting the patient to the state licensing agency. Physician-patient privilege, which is defined as the patient's right to prevent disclosure by the physician of any communication between the physician and patient, does not apply in cases of mandatory reporting. Patients can be reminded that clinicians do not determine licensing. Ultimately, this is the responsibility of the state, and thus the state makes the final decision on determining whether the patient can continue to drive.

Situation 2: The patient is an unsafe driver in a state without state reporting laws.

In this situation, the clinician's 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 state licensing agency. Before reporting a patient, clinicians may address the risk of liability for breaching patient confidentiality by following the steps listed under Situation 1.

However, if the patient continues to refuse to stop driving, then clinicians must consider which is more likely to cause the greatest amount of harm: breaching the patient's confidentiality versus allowing the patient to potentially injure himself or herself or third parties in a motor vehicle crash.

Situation 3: The patient's license has been suspended by the state licensing agency for unsafe driving, but the clinician is aware that he or she continues to drive.

This patient is violating the law, and several questions are raised: Is the clinician responsible for upholding the law at the expense of breaching patient confidentiality? Because the license has been revoked by the state licensing agency, is the driving safety of the patient now the responsibility of the state, the clinician, or both?

Several steps can be taken in this situation:

■ Ask the patient why he or she continues to drive. Address the specific causes brought up by the patient (see Chapter 6 for recommendations). With the patient's permission, caregivers should be involved in finding solutions such as alternative methods of transportation.

■ Ask the patient if he or she understands that continuing to drive is breaking the law. Reiterate concerns about the patient's safety and ask how he or she would feel about causing a crash and potentially being injured or injuring someone else. Discuss the emotional burden a car crash would cause the patient, his or her family, and all others involved.

■ Discuss the financial and legal consequences of being involved in a crash without a license or auto insurance. Many clinicians remind patients and families/caregivers of the possibility of their financial liability for any injuries caused by driving.

■ If the 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, if the patient has a designated decision-maker. If not, the patient and caregiver(s) should pursue the process of appointing one. These parties should understand

their responsibility to prevent the patient from driving.

- If the patient continues to drive and the state has a mandatory reporting law, clinicians must adhere to the law by reporting patients who are unsafe drivers (even if the patient has been reported previously). If the state does not have a mandatory reporting law, the clinician should base the decision to report as in Situation 2 (see above). The state licensing agency, as the agency that grants and revokes the driver's license, will follow up as it deems appropriate.

Situation 4: The patient threatens to find a new clinician if reported to the state licensing agency.

Although unfortunate, this situation should not prevent clinicians from caring for the patient's health and safety. In addition, physicians must adhere to state reporting laws, regardless of such threats.

Several strategies may help diffuse this situation:

- Reiterate the process and information used to support the recommendation that the patient stop driving.
- Reiterate concern for the safety of the patient, any passengers, and others on the road.
- Remind the patient that providing him or her with the best possible health care includes safety measures of all types. State that driving safety is as much a part of patient care as encouraging patients to keep smoke detectors in the house and have regular physical check-ups.
- Encourage patients to seek a second opinion, if appropriate. A DRS may evaluate the patient if this has not already been done, or the patient may consult another clinician.
- If the state licensing agency follows up on clinician reports by requiring the patient to be retested, inform the patient that just as it is the clinician's responsibility to report the patient to the agency, it is the patient's responsibility to prove his or her driving safety to the agency. Emphasize that the state licensing agency makes the final decision, and that only the state can legally revoke a driver's license. Remind the patient that everything medically possible has been done to help him or her pass the driver test.
- As always, maintain professional behavior by remaining matter-of-fact and not expressing hostility toward the patient, even if he or she ultimately makes the decision to seek a new clinician.

PATIENT RESOURCES

The following online patient/caregiver resources are available from the National Highway Traffic Safety Administration (NHTSA). Clinicians may wish to download these materials and are free to put their personalized information/logo on the materials.

Driving Safely While Aging Gracefully,[39] is guidance available on the National Highway Traffic Safety Administration Older Driver website and can help older adults assess whether they should still be driving.

Getting Around: Other Ways to Get Around[40] is a brochure from AAA designed to help families cope with an older adult who should not be driving. Clinicians may wish to keep a supply of these documents on hand. Additional resources are discussed in Chapter 6 and listed in Appendix B.

GLOSSARY OF TERMS[42–45]

Before consulting the reference list in Chapter 8, it will be helpful to be familiar with the following terms and concepts (Table 7.1).

Table 7.1 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 states will maintain the confidentiality of the reporter, unless otherwise required to disclose by a court order.[41]
Driver rehabilitation programs	These programs, run by DRSs, help identify at-risk drivers and improve driver safety through adaptive devices and compensatory techniques. Drivers typically receive a clinical evaluation, on-road assessment, and, if necessary, vehicle modifications and training. (For more information on driver assessment and rehabilitation, see Chapter 5.)
Duty to protect	In certain jurisdictions, physicians have a legal duty to warn the public of danger their patients may cause, especially in the case of identifiable third parties.6 With respect to driving, mandatory reporting laws and physician reporting laws provide physicians with guidance on their duty to protect.
Good faith	Honesty and respect in all professional interactions[42]
Immunity for reporting	Many states exempt physicians from liability for civil damages brought by the patient if the physician previously reported the patient to the state licensing agency.
Medically impaired driver	A driver who is suffering from cognitive and/or functional impairments likely to affect the ability to safely operate a motor vehicle.
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 licensing agency. These states provide specific guidelines and forms that can be obtained through the state licensing agency.
Medical Advisory Boards (MABs)	MABs generally consist of local or consultant physicians who work in conjunction with the state licensing agency 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.

Table 7.1 Glossary of Terms/cont.

Patient confidentiality	The right of an individual to have personal, identifiable medical information kept private.
Physician reporting laws	Some states require physicians to report "unsafe" drivers to the state licensing agency, with varying guidelines for defining "unsafe." The physician may need to provide the patient's diagnosis and any evidence of a functional impairment that can affect driving (e.g., results of neurologic testing) to prove that the patient is an unsafe driver.[43]
Physician liability	Refers to the legal duty of the physician to report his or her patient's status as an at-risk driver to the state licensing agency. Failure to report (negligence) can result in the physician being held liable (responsible) for civil damages caused by the patient's car crash.[44]
Renewal procedures	License renewal procedures vary by state. Some states have age-based renewal procedures, i.e., 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 ability and knowledge of traffic laws and signs, and/or require on-road testing. Very few states require a medical report for license renewal.[45]
Restricted driver's license	Some states offer a 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. The efficacy of these types of restrictions has not been studied.
Third party	The generic legal term for any individual who does not have a direct connection with the clinician but who might be affected by him or her, e.g., anyone injured other than the patient.

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8. Title 75 PA. CODE § 1518(b) The Vehicle Code (stating physicians are immune from any civil or criminal liability if they report patients 15 years old or older who have been diagnosed as having a condition that could impair their 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).

9. Gooden v. Tips, 651 S.W.2d 364, 1983 Tex. App., 43 A.L.R.4th 139 (Tex. App. Tyler 1983) (case stating 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). However, the Supreme Court of Texas significantly narrowed physicians' duties to third parties. In Praesel v. Johnson, 967 S.W.2d 391, 396 (Tex. 1998), the court noted that it had "generally limited the scope of the duty owed by physicians in providing medical care to their patients." The court "declined to impose on physicians a duty to third parties to warn an epileptic patient not to drive." Somewhat similarly that court "weighed the risk, foreseeability, and likelihood of injury against the social utility of the actor's conduct, the magnitude of the burden of guarding against the injury, and the consequences of placing the burden on the defendant," and also considered "whether one party would generally have superior knowledge of the risk or a right to control the actor who caused the harm." 967 S.W.2d at 397-98. For a general discussion on this topic, see 43 A.L.R. 4th 153; 35 U. Mem. L.Rev. 173; See Comment: Driving on the center line: Missouri physician's potential liability to third persons for failing to warn of medication side effects (46 St. Louis L.J. 873); Wilschinsky v. Medina, 1989- NMSC-047, 108 N.M. 511, 775 P.2d 713, (N.M. 1989). (New Mexico case stating that the physician owed a duty of care to an individual harmed by the physician's patient, that the patient'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). Limited by Lester by & Through Mavrogenis v. Hall, 1998-NMSC-047, 126 N.M. 404, 970 P.2d 590, 38 N.M. B. Bull. 2, 38 N.M. B. Bull. 11 2 (1998) (This Court did not extend the duty articulated in Wilschinsky to prescription cases under the case fact pattern.) See also Brown v. Kellogg, 2015-NMCA-006, 340 P.3d 1274 (N.M. Ct. App. 2014).

10. Tarasoff v. Regents of University of California, 17 Cal. 3d 425; 551 P.2d 334; 131 Cal. Rptr. 14 (Cal. 1976 Cal.); 83 A.L.R.3d 1166, 1976 (rehearing to the California Supreme Court upheld on the duty to warn and protect). In Tarasoff, the California Supreme Court held that, under certain circumstances, a therapist had a duty to warn others that a patient under the therapist's care was likely to cause personal injury to a third party. There the court said, "Although . . . under the common law, as a general rule, one person owed no duty to control the conduct of another, nor to warn those endangered by such conduct, the courts have carved out an exception to this rule in cases in which the defendant stands in some special relationship to either the person whose conduct needs to be controlled or in a relationship to the foreseeable victim of that conduct." (P. 435.) Applying that exception to the facts of Tarasoff, the court held that where a therapist knows that his patient is likely to injure another and where the identity of the likely victim is known or readily discoverable by the therapist, he must use reasonable care to prevent his patient from causing the intended injury. Such care includes, at the least, informing the proper authorities and warning the likely victim. However, the court did not hold that such disclosure was required where the danger presented was that of self-inflicted harm or suicide or where the danger consisted of a likelihood of property damage. Instead, the court recognized the importance of the confidential relationship which ordinarily obtains between a therapist and his patient, holding that ". . . the therapist's obligations to his patient require that he not disclose a confidence unless such disclosure is necessary to avert danger to others . . . ." (Tarasoff, supra, p. 441; italics added). The holding in Tarasoff was questioned in Mason v. IHS Cedars Treatment Ctr. of Desoto Tex., Inc. (Tex. App. Dallas Aug. 15, 2001); criticized in Gregory v. Kilbride, 150 N.C. App. 601, 565 S.E.2d 685 (N.C. App. 2002) and Tedrick v. Cmty. Res. Ctr., Inc., 235 Ill. 2d 155, 920 N.E.2d 220 (Ill. 2009); and superseded in part by Nebraska State statue in Munstermann v. Alegent Health - Immanuel Med. Ctr., 271 Neb. 834, 716 N.W.2d 73, (Neb.2006). 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 pre-sentenced with someone making a threat of harm to a third party. Tasman, A., Kay, J., Lieberman, J. A., & Fletcher, J. (eds). Psychiatry, 1st ed. Philadelphia: W.B. Saunders Company; 1997, p. 1815.

11. Brisbane v. Outside in Sch. of Experiential Educ., Inc., 799 A.2d 89 (Pa. Super. Ct. 2002) (defining factors in a Pennsylvania case to determine 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). Pennsylvania did not expand the duty of a parent to encompass supervision of adult children, see Kazlauskas v. Verrochio (M.D. Pa. Oct. 27, 2014). Case questioned by Bellah v. Greenson, 81 Cal. App. 3d 614, 146 Cal. Rpt., 535, 1978, 17 A.L.R. 4th 1118 (Cal. App. 1st Dist. 1978). Explained by Felty v. Lawton, 1977 OK 109, 578 P.2d 757 (Okla. 1977). For a general discussion on this topic, see A.L.R. 3d 1201; 46 Ca. Jur., Negligence Sections 10 and 212.

12. Gooden v. Tips, supra at FN 5; Kaiser v. Suburban Transp. System, 65 Wn.2d 461, 398 P.2d 14 (Wash.1965) (Washington case stating 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). Superseded on other grounds by statute State v. Fisher (Wash. Ct. App. May 29, 2012).

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CHAPTER 8 STATE LICENSING AND REPORTING LAWS

KEY POINTS

- Each state has its own licensing and license renewal criteria.
- Licensing and license renewal information is subject to change, and statutes for specific states should be checked for up-to-date changes in laws or requirements.

Each state has its own licensing and license renewal criteria for drivers of private motor vehicles. In addition, certain states require health care professionals to report unsafe drivers or drivers with specific medical conditions to the driver licensing agency. State law restrictions for older drivers vary according to age requirements of additional drivers, length of renewal cycle, vision requirements, license restrictions, level of mandatory reporting by health care professionals, civil immunity, anonymity protection, and process for evaluation by medical advisory boards. The effectiveness of driving restrictions in reducing vehicle crashes or fatalities involving older adults also varies from state to state.

Licensing agency contact information by state is listed below, along with additional resources for locating license renewal criteria, reporting procedures, and medical advisory board information. These materials are intended to guide healthcare professionals in understanding their legal responsibilities and managing the driving safety of their patients. The information provided should neither be construed as legal advice nor used to resolve legal problems. If legal advice is required, a licensed attorney (in the relevant state) should be consulted.

A database of state license renewal cycles, vision requirements, and procedures can be found at:

- Insurance Institute for Highway Safety (www.iihs.org/iihs/topics/laws/olderdrivers)
- Insurance Information Institute (www.iii.org/)

This information is subject to change, and statues for specific states should be checked for up-to-date changes in laws or requirements. This is especially important when creating a clinic policy or deciding on an individualized approach to reporting. Legal counsel is recommended to advise on decision-making in this area.

STATE LICENSING AGENCIES
(CURRENT AS OF APRIL 2019)

Alabama
Alabama Law Enforcement Agency Department of Public Safety
PO Box 1471
Montgomery, AL 36102-1471
334-242-4400
https://www.alea.gov/dps

Alaska
Alaska Department of Administration Division
of Motor Vehicles
1300 W. Benson Boulevard
Anchorage, AK 99503-3696
855-269-5551
http://doa.alaska.gov/dmv/
http://doa.alaska.gov/dmv/akol/medical_impair.htm?_ga=2.190336107.1963593011.1530539137-339207583.1530539137

Arizona
Arizona Department of Transportation
Motor Vehicle Division
PO Box 2100, Mail Drop 555M
Phoenix, AZ 85001-2100
800-251-5866
https://www.azdot.gov/motor-vehicles
https://www.azdot.gov/motor-vehicles/driver-services/MedicalReview

Arkansas
Arkansas Department of Finance and Administration
Arkansas Driver Control
1900 W. 7th St., Rm 1070
Little Rock, AR 72201
501-682-1631
https://www.dfa.arkansas.gov/driver-services/
https://www.dfa.arkansas.gov/driver-services/driver-control/

California
California Department of Motor Vehicles Licensing Operations Division
2570 24th Street, MS J152
Sacramento, CA 95818-2698
916-657-6550
https://www.dmv.ca.gov/portal/dmv
https://www.dmv.ca.gov/portal/dmv/?1dmy&urile=wcm:path:/dmv_content_en/dmv/dl/driversafety/dsmedcontraffic

Colorado
Colorado Department of Revenue Division
of Motor Vehicles
1881 Pierce Street
Lakewood, CO 80214
303-205-5600
https://www.colorado.gov/dmv

Connecticut
Connecticut Department of Motor Vehicles
60 State Street
Wethersfield, CT 06161-2510
860-263-5700
http://www.ct.gov/dmv/site/default.asp

Delaware
Delaware Division of Motor Vehicles
Driver License Administration Medical Section
PO Box 698
Dover, DE 19903
302-744-2507
https://www.dmv.de.gov/
https://www.dmv.de.gov/services/driver_services/senior/index.shtml

District of Columbia
District of Columbia Department of Motor Vehicles
Medical Review Office
955 L'Enfant Plaza, SW
Washington, DC 20024
202-737-4404
https://dmv.dc.gov/
https://dmv.dc.gov/service/dmv-medical-requirements

Florida
Florida Highway Safety and Motor Vehicles
Medical Review Office
850-617-3814
https://www.flhsmv.gov/
https://www.flhsmv.gov/driver-licenses-id-cards/florida-granddriver/medical-reporting-medical-review-process/

Georgia
Georgia Department of Driver Services, Attn: Medical Unit
PO Box 80447
Conyers, GA 30013
678-413-8400
https://dds.georgia.gov/

Hawaii
Hawaii's Medical Advisory Board
Aliiaimoku Building
869 Punchbowl Street
Honolulu, HI 96813
808-692-7656 or 808-692-7655
http://www.honolulu.gov/license
http://hidot.hawaii.gov/administration/bac/mab/

Idaho
Idaho Transportation Department
Division of Motor Vehicles - Driver Services
3311 W. State Street
PO Box 7129
Boise, ID 83707-1129
208-334-8000
https://itd.idaho.gov/itddmv/

Illinois
Illinois Office of the Secretary of State
Driver Services Department
2701 S. Dirksen Parkway
Springfield, IL 62723
217-782-6212
Driver Services Department–Metro
17 N. State Street, Suite 1100
Chicago, IL 60602
312-793-1010
http://www.cyberdriveillinois.com/departments/drivers/home.html
http://www.cyberdriveillinois.com/departments/drivers/drivers_license/medical_vision.html

Indiana
Indiana Bureau of Motor Vehicles
Indiana Government Center North
100 North Senate Avenue
Indianapolis, IN 46204
888-692-6841
https://www.in.gov/bmv/

Iowa
Iowa Department of Transportation Motor Vehicles Division
800 Lincoln Way
Ames, IA 50010
515-239-1101 or 515-244-8725
https://www.iowadot.gov/mvd/

Kansas
Kansas Department of Revenue Division of Vehicles
Driver's Licensing
P.O. Box 2188
Topeka, KS 66601-2188
785-296-3671 or 785-296-3963
https://www.ksrevenue.org/dovindex.html
https://www.ksrevenue.org/dovmedvision.html

Kentucky
Kentucky Transportation Cabinet
Department of Vehicle Regulation
Attn: Medical Review Board
200 Mero Street
Frankfort, KY 40622
https://drive.ky.gov/
https://drive.ky.gov/driver-licensing/Pages/Kentucky-Medical-Review-Board-Program.aspx

Louisiana
Louisiana Office of Motor Vehicles
PO Box 64886
Baton Rouge, LA 70896
225-925-6146
http://www.expresslane.org

Maine
Maine Bureau of Motor Vehicles
Attn: Medical Advisory Board
29 State House Station
Augusta, ME 04333-0029
209-624-9000 ext 52124
https://www.maine.gov/sos/bmv/
https://www.maine.gov/sos/bmv/licenses/medical.html

Maryland
Maryland Motor Vehicle Administration
6601 Ritchie Highway NE
Glen Burnie, MD 21062
410-768-7000 or 800-492-4575
http://www.mva.maryland.gov/
http://www.mva.maryland.gov/about-mva/info/26200/26200-03T.htm

Massachusetts
Massachusetts Registry of Motor Vehicles
Medical Affairs Branch
PO Box 199100
Boston, MA 02119-9100
857-368-8000 or 800-858-3926
https://www.mass.gov/orgs/massachusetts-registry-of-motor-vehicles
https://www.mass.gov/medical-standards-related-to-driving

Michigan
Michigan Department of State
Driver Assessment and License Appeal Unit
P.O. Box 30810
Lansing, MI 48909-9832
517-335-7051
https://www.michigan.gov/sos
https://www.michigan.gov/agingdriver/0,6066,7-341-72511---,00.html

Minnesota
Minnesota Department of Public Safety Driver and Vehicle Services
Attn: Medical Unit
445 Minnesota Street, Suite 170
St Paul, MN 55101-5170
651-296-2025
https://dps.mn.gov/divisions/dvs/Pages/default.aspx
https://dps.mn.gov/divisions/dvs/Pages/dvs-content-detail.aspx?pageID=670

Mississippi
Mississippi Department of Public Safety Driver Improvement PO Box 948
Jackson, MS 39205
601-987-1515 or 601-987-1212
https://www.driverservicebureau.dps.ms.gov/

Missouri
Missouri Driver License Bureau
P.O. Box 200
Jefferson City, MO 65105-0200
573-526-2407
https://dor.mo.gov/drivers/
https://dor.mo.gov/faq/drivers/unsafe.php

Montana
Motor Vehicle Division
Attn. Medical Unit
P.O. Box 201430
Helena, MT 59620-1430
406-444-3933
https://dojmt.gov/driving/driverservices/

Nebraska
Nebraska Department of Motor Vehicles
Driver Licensing Division
PO Box 94726
Lincoln, NE 68509-4726
402-471-3861
https://dmv.nebraska.gov/
https://dot.nebraska.gov/safety/driving/age/

Nevada
Nevada Department of Motor Vehicles Management
Services and Programs Division
555 Wright Way
Carson City, NV 89711
(702) 486-4368
http://www.dmvnv.com

New Hampshire
New Hampshire Department of Safety Division
of Motor Vehicles
10 Hazen Drive
Concord, NH 03305
603-227-4000
https://www.nh.gov/safety/divisions/dmv/

New Jersey
New Jersey Motor Vehicle Commission
P.O. Box 173
Trenton, NJ 08666-0173
609-292-7500 x5032
https://www.nj.gov/mvc/
https://www.nj.gov/mvc/drivertopics/medreview.htm

New Mexico
Drivers Services Bureau
Motor Vehicle Division
P.O. Box 1028
Santa Fe, NM 87504-1028
888-683-4636
http://www.mvd.newmexico.gov/

New York
New York Department of Motor Vehicles
Medical Review Unit
6 Empire State Plaza, Room 337
Albany, NY 12228
518-474-0774, Option #3
https://dmv.ny.gov/
http://dmv.ny.gov/driver-license/dmvs-medical-review-program

North Carolina
North Carolina Division of Motor Vehicles Medical
Evaluation & Review
3112 Mail Service Center
Raleigh, NC 27697-3112
(919) 861-3809
https://www.ncdot.gov/DMV/
https://www.ncdot.gov/dmv/license-id/license-suspension/medical-review-program/Pages/default.aspx

North Dakota
North Dakota Department of Transportation
Drivers License Division
Attn: Chief Examiner
608 East Boulevard Avenue
Bismarck, ND 58505-0750
701-328-4353
http://www.dot.nd.gov/
http://www.dot.nd.gov/divisions/driverslicense/whatcanido.htm

Ohio
Ohio Bureau of Motor Vehicles
Driver License Special Case Section/Medical Unit
PO Box 16784
Columbus, OH 43216-6784
614-752-7500
http://www.bmv.ohio.gov
http://bmv.ohio.gov/dl-restriction-medical.aspx

Oklahoma
Department of Public Safety
Driver Compliance Division - Medical Desk
PO Box 11415
Oklahoma City, OK 73136-0415
405-425-2083
https://www.ok.gov/dps/

Oregon

Oregon Department of Motor Vehicles Driver Safety Unit
1905 Lana Avenue NE
Salem OR 97314
503-945-5083
https://www.oregon.gov/ODOT/DMV
https://www.oregon.gov/ODOT/DMV/pages/at-risk_program_index.aspx

Pennsylvania

Pennsylvania Department of Transportation Bureau of Driver Licensing
Driver Qualifications Section
PO Box 68682
Harrisburg, PA 17106-8682
717-787-9662
http://www.dmv.pa.gov/
http://www.dmv.pa.gov/Driver-Services/Mature-Drivers/Pages/default.aspx

Rhode Island

Rhode Island Department of Revenue Division of Motor Vehicles
Adjudication Office
600 New London Avenue
Cranston, RI 02920
401-462-0800
http://www.dmv.ri.gov/
http://www.dmv.ri.gov/adjudication/medical/index.php

South Carolina

South Carolina Department of Motor Vehicles
PO Box 1498
Blythewood, SC 29016
803-896-5000
http://scdmvonline.com/

South Dakota

South Dakota Department of Public Safety Driver Licensing
118 West Capitol Avenue
Pierre, SD 57501
605-773-6883
https://dps.sd.gov/driver-licensing
https://dps.sd.gov/driver-licensing/south-dakota-licensing-information/aging-drivers

Tennessee

Tennessee Department of Safety & Homeland Security
Driver License Division
1150 Foster Ave
Nashville, TN 37249-1000
615-741-3954
https://www.tn.gov/driver-services.html

Texas

Texas Department of Public Safety Driver License Division
Enforcement and Compliance Service
P.O. Box 4087
Austin, TX 78773-0320
512-424-2600
http://www.dps.texas.gov/DriverLicense/
http://www.dps.texas.gov/DriverLicense/MedicalRevocation.htm

Utah

Utah Department of Public Safety Driver License Division
PO Box 144501
Salt Lake City, UT 84129
801-957-8690
https://dld.utah.gov/
https://dld.utah.gov/other-resources/medical-standards/

Vermont

Vermont Department of Motor Vehicles
120 State Street
Montpelier, Vermont 05603-0001
802-828-2000
http://dmv.vermont.gov/
http://dmv.vermont.gov/licenses/renew/mature-drivers

Virginia

Virginia Department of Motor Vehicles Medical Review Services
PO Box 27412
Richmond, VA 23269
804-497-7100
https://www.dmv.virginia.gov
https://www.dmv.virginia.gov/drivers/#medical/index.asp

Washington

Washington State Department of Licensing Driver Records
PO Box 9030
Olympia, WA 98507-9030
360-902-3900
https://www.dol.wa.gov/
https://www.dol.wa.gov/driverslicense/reportunsafe.html

West Virginia

West Virginia Department of Transportation Division of Motor Vehicles
Medical Review Unit
PO Box 17030
Charleston, WV 25317
304-558-3900
https://transportation.wv.gov/dmv/
https://transportation.wv.gov/DMV/Drivers/Pages/Medical-Review-Unit.aspx

Wisconsin

Wisconsin Department of Transportation
Medical Review & Fitness Unit
PO Box 7918
Madison WI 53707-7918
608-266-2327
http://wisconsindot.gov/Pages/online-srvcs/online.aspx
http://wisconsindot.gov/Pages/dmv/license-drvs/mdcl-cncrns/med-concerns.aspx

Wyoming

Wyoming Department of Transportation Driver Services Program
Driver Services - Driver Review Section
5300 Bishop Blvd.
Cheyenne, WY 82009-3340
307-777-4800
http://www.dot.state.wy.us/driverservices

ADDITIONAL RESOURCES

AAA/CAA Digest of Motor Laws
http://drivinglaws.aaa.com/

Driver Licensing Policies and Practices
http://lpp.seniordrivers.org/

Insurance Institute for Highway Safety
http://www.iihs.org/iihs/topics/t/older-drivers/topicoverview

Insurance Information Institute
https://www.iii.org/

CHAPTER 9 MEDICAL CONDITIONS, FUNCTIONAL DEFICITS, AND MEDICATIONS THAT MAY AFFECT DRIVING SAFETY

KEY POINTS

- Many medical conditions, functional deficits, and/or medications may potentially impair driving.
- Treat the underlying medical condition and/or functional deficit to improve the condition/impairment or limit progression.
- If the functional deficit is due to an identifiable offending agent (e.g., medication with potentially driver-impairing [PDI] effects), remove the offending agent or reduce the dose, if possible.
- Advise the older adult about the risks to his or her driving safety, consider referral for assessment of driving performance, recommend driving restrictions or driving cessation as needed, and document the discussion in the health record.

This chapter contains reference tables of medical conditions, functional deficits, and medications that may impair driving skills, with associated consensus recommendations. 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, the 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 evidence-based literature indicating an association with driving impairment. Interested clinicians are referred to reviews that provide details regarding individual conditions or deficits, as well as guidelines from other countries, including Australia, Canada, Ireland, and the United Kingdom.[1-8]

Although these recommendations are based on scientific evidence whenever possible, their use per se has not yet been proved to reduce crash risk.* However, increasing evidence suggests that interventions for some medical conditions (e.g., treating obstructive sleep apnea, performing cataract surgery, discontinuing a benzodiazepine) and functional deficits (e.g., improving information processing speed, physical ability), combined with classroom and on-road training may lower crash risk or enhance/maintain driving performance. As such, these recommendations are provided as a means to help raise awareness of which drivers might be at increased risk, suggest options for intervention, and guide the decision-making process. When evidence is not available, the recommendations are based on consensus recommendations and best clinical judgment. They are not intended to substitute for the individual clinician's judgment.

HOW TO USE THIS CHAPTER

Clinicians may consult this chapter for questions on specific medical conditions, functional deficits (e.g., deficits in vision, cognition, or motor function), and/or medications that may have an effect on driving safety. If an older adult presents with any of these issues, clinicians may base further assessment and

**Note: 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.*

interventions for driving safety on the guidelines presented here.

General Recommendations

■ Treat the underlying medical condition and/or functional deficit to improve the condition/impairment or limit progression.

■ If the functional deficit is due to an identifiable offending agent (e.g., medication with PDI effects), remove the offending agent or reduce the dose, if possible.

■ If the functional deficit can be addressed through compensation or modification (e.g., hand controls, left foot accelerator), refer for a comprehensive driving evaluation.

■ Advise the older adult about the risks to his or her driving safety, consider referral for assessment of driving performance, recommend driving restrictions or driving cessation as needed, and document the discussion in the health record.

■ For acute or episodic illnesses (e.g., seizure disorder and/or diabetes with hypoglycemia), clinical judgment and subspecialist input is recommended, in addition to following specific state statutes.

If further evaluation is required and desirable, or the conditions and/or functional deficits are not medically correctable, the older adult should be referred to a driver rehabilitation specialist (DRS) for a driving evaluation (including on-road assessment). The DRS may prescribe adaptive equipment and training on how to use it (see Chapter 5).

Clinicians should advise older adults against driving if they report symptoms that are irreversible, for which no safe compensatory techniques/equipment are available, and are incompatible with safe driving (e.g., visual changes, syncope or presyncope, vertigo, etc.). If these symptoms continue despite extensive medical evaluation and treatment, such individuals should be strongly urged to seek alternative forms of transportation, including taxis, rides from family and friends, and medical transportation services.

In the hospital and the emergency department, driving should be routinely addressed before the older adult's discharge whenever appropriate, especially in the presence of new functional deficits or when prescribing new medications. Even for the older adult whose symptoms or treatment clearly precludes driving, it should not be assumed that the person is aware that he or she should not drive. The clinician should counsel the older adult regarding driving, discuss a future plan (e.g., resumption of driving on resolution of symptoms, driver rehabilitation on stabilization of symptoms, reassessment by the primary clinician or relevant specialist before driving resumption), and document the discussion in the health record.

An older adult's driving purposes may range from being responsible for taking grandchildren to day care to driving for a vocation (e.g., a salesperson who drives throughout a region). Such differences 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 an older adult who frequently drives long distances over unfamiliar roads versus for one who drives short, familiar routes.

REFERENCE TABLES OF MEDICAL CONDITIONS, FUNCTIONAL DEFICITS, AND MEDICATIONS THAT MAY AFFECT DRIVING SAFETY

Various medical conditions and/or functional deficits are covered in the following sections (with corresponding tables). Conditions treated with medications with PDI effects are listed at the end

of the discussion for that condition and cross-referenced to Section 13 (on medications) for more information.

Section 1: Vision and Hearing Loss

Section 2: Cardiovascular Disorders

Section 3: Cerebrovascular Disorders

Section 4: Neurologic Disorders

Section 5: Psychiatric Disorders

Section 6: Metabolic Disorders

Section 7: Musculoskeletal Disorders

Section 8: Peripheral Vascular Disorders

Section 9: Renal Disorders

Section 10: Respiratory and Sleep Disorders

Section 11: Effects of Anesthesia and Surgery

Section 12: Cancer

Section 13: Medications

SECTION 1: VISION AND HEARING LOSS

Vision is the primary sense used in driving (versus hearing and proprioception) and is responsible for 95% of driving-related sensory inputs.[9] 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, because it may significantly limit visual fields. The literature on eye disease suggests that driving impairment is likely mediated by impairment in contrast sensitivity,[10] visual fields,[11] or visual processing speed.

Whenever possible, vision deficits should be managed and corrected. Interventions for common eye diseases such as age-related macular degeneration,[12] glaucoma,[13] and cataracts[14] have the potential to improve or stabilize the condition, and in some cases these interventions have been noted to reduce crash risk.[15] Older adults with persistent vision deficits may potentially reduce their effect on driving safety by restricting travel to low-risk areas and conditions, such as familiar surroundings, low-speed areas, non-rush hour traffic, daytime, and good weather conditions. This has been noted for certain eye diseases, such as glaucoma.[16] Bioptic driving is allowed in 44 states, although requirements vary.[17] Bioptic driving is a method of driving in which a small telescopic system is used to improve a person's far vision for some visually impaired individuals and might be considered for some drivers. The recommendations below are subject to each state's licensing requirements. For resources to locate Internet listings for current individual state laws, see Chapter 8.

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

Table 9.1 - Sensory Deprivation

Visual acuity	Many states require far visual acuity of 20/40 for licensure. State driver licensing agencies are urged to base their visual acuity requirements on the most current data, as appropriate. Referral to an ophthalmologist is recommended to optimize refraction and because 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 individual prefers. The older adult should wear any corrective lenses usually worn for driving. Older adults with decreased far visual acuity may potentially lessen its effect 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, clinicians should recommend an on-road assessment performed by a DRS (where permitted and available) to evaluate the older adult's performance in the actual driving task. For best-corrected far visual acuity less than 20/100, clinicians should recommend the older adult not drive unless safe driving ability can be demonstrated in an on-road assessment performed by a DRS (where permitted and available). See also Telescopic lens, below.
Cataracts	No restrictions if standards for visual acuity and visual fields are met, either with or without cataract removal. Individuals who require increased illumination or who experience difficulty with glare recovery should avoid driving at night and under low-light conditions, such as during adverse weather.
Diabetic or hypertensive retinopathy	No restrictions if standards for visual acuity and visual fields are met. Annual eye examinations are recommended for diabetic individuals.
Keratoconus	Individuals with severe keratoconus correctable with hard contact lenses should drive only when the lenses are in place. If lenses cannot be tolerated, individuals with severe keratoconus should not drive even if they meet standards for visual acuity, because 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. Older adults who experience difficulty with glare recovery should avoid driving at night. Individuals with the neovascular "wet" form may require frequent assessment because of 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.[18]

Telescopic lens (cont.)	The specialist who prescribes a telescopic lens should ensure that the older adult is properly trained in its use. It has not been established whether telescopes enhance the safety of low-vision drivers. The American Academy of Ophthalmology's Policy Statement, Vision Requirements for Driving (approved by Board of Trustees, October 2001) states: "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." A road test should be administered only in those states that permit the use of bioptic telescopes in driving.
Visual field	Although an adequate visual field is acknowledged to be important for safe driving, there is no conclusive evidence to define what is meant by "adequate" nor is there 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 in the horizontal plane, and other states having a lesser requirement or none at all.[18] If the primary care clinician has any reason to suspect a visual field defect (e.g., through personal report, medical history, or confrontation testing), he or she should refer the older adult to an ophthalmologist or optometrist for further evaluation. Both the primary care clinician and specialist should be aware of and adhere to their state's visual field requirements, if any. For binocular visual field at or near the state minimum requirement or of questionable adequacy (as deemed by clinical judgment), a comprehensive driving evaluation (including on-road assessment) performed by a DRS is strongly recommended. Through driving rehabilitation, older adults may learn how to compensate for decreased visual fields, although not hemineglect. In addition, the DRS may prescribe enlarged side and rearview mirrors as needed and train the older adult 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	Clinicians may choose to refer older adults to a DRS for assessment and rehabilitation. With or without rehabilitation, older adults should drive only if they demonstrate safe driving ability in an on-road assessment performed by a DRS.
Monocular vision	Older adults 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.

Monocular vision (cont.)	After this period, there are no restrictions if standards for visual acuity and visual fields are met. After individuals start driving again, they should be advised to assess their comfort level by driving in familiar, traffic-free areas before advancing to areas of heavy traffic. Again, use of larger mirrors and evaluation and training by a DRS are 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. Older adults 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 adults than in their younger counterparts.[2] Among older drivers, binocular measures of contrast sensitivity have been found to be a valid predictor of crash risk in individuals with cataracts.[19] However, there are presently no standardized cut-off points for contrast sensitivity and safe driving, and it is not routinely measured in eye examinations. Older adults can be educated about driving conditions to avoid if they have poor contrast sensitivity (e.g., dawn, dusk, fog).
Defective color vision	No restrictions if standards for visual acuity and visual fields are met. Deficits in color vision are common (especially in men) and usually mild. There appears to be no correlation between defective color vision and crash rates.20Some states require prospective drivers to undergo color vision screening, and many of these states require screening for commercial drivers only.[18] Despite reported difficulties with color vision discrimination while driving (difficulty distinguishing 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.[2] Standardization of traffic signal positions allows color blind individuals to interpret traffic signals correctly based on position. Clinicians may wish to advise older adults that the order of signals in the less commonly used horizontal placement of left to right is red, yellow, green.
Poor night vision	If the older adult reports poor visibility at night, clinicians should recommend ophthalmologic and/or optometric evaluation. If the evaluation does not reveal a treatable cause for poor night vision, clinicians should recommend that the older adult not drive at night or under other low-light conditions, such as during storms or at dusk.

Diplopia	Individuals with double vision in the central aspect of vision (20 degrees above and below, left and right of fixation) should not drive. Those 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 3-month adjustment period, after which specialists can determine if adequate adjustment has occurred.[6]
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.[2] However, one study suggested that a combination of hearing and vision deficits might increase crash risk.[21]

SECTION 2: CARDIOVASCULAR DISORDERS

1. Unstable coronary syndrome (unstable angina or myocardial infarction)

2. Cardiac rhythm abnormalities that may cause a sudden, unpredictable loss of consciousness

   a. Atrial flutter/fibrillation with bradycardia or rapid ventricular response

   b. Paroxysmal supraventricular tachycardia, including Wolf-Parkinson-White syndrome

   c. Prolonged, nonsustained ventricular tachycardia

   d. Sustained ventricular tachycardia

   e. Cardiac arrest

   f. High-grade atrioventricular 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 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

   b. Pacemaker insertion or revision

   c. Cardiac surgery involving median sternotomy

   d. Coronary artery bypass graft

   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, one study noted a modest increase in total crash risk and at-fault risk for older adults with cardiac disease.[22] For older adults with known cardiac disease, clinicians should strongly and repeatedly caution such individuals to seek help immediately on experiencing any symptoms that may indicate an unstable cardiac situation, including prolonged chest discomfort, acute shortness of breath, syncope, presyncope, palpitations, lightheadedness, etc. Under no circumstances should the older adult drive while experiencing these symptoms, even to seek help.

Table 9.2 - Cardiovascular Disorders

Unstable coronary syndrome (unstable angina or myocardial infarction)	Older adults should not drive if they experience symptoms at rest or at the wheel. Individuals may resume driving when they have been stable and asymptomatic for 1–4 weeks, as determined by a cardiologist, after treatment of the underlying coronary disease. Driving may usually resume within 1 week after successful revascularization by percutaneous transluminal coronary angioplasty and by 4 weeks after coronary artery bypass grafting (CABG).[23] 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 older adults with cardiac conditions is the risk of presyncope or syncope due to a slow or rapid rhythm abnormality.[24] For older adults with a known arrhythmia, clinicians should identify and treat the underlying cause of arrhythmia, if possible, and recommend temporary driving cessation until symptoms have been controlled.
Atrial flutter/fibrillation with bradycardia or rapid ventricular response	No further restrictions once heart rate and symptoms have been controlled.
Paroxysmal supraventricular tachycardia, including Wolf-Parkinson-White syndrome	No restrictions if the older adult is asymptomatic during documented episodes. Older adults with a history of symptomatic tachycardia may resume driving after they have been asymptomatic for 6 months on antiarrhythmic therapy. Individuals who undergo radiofrequency ablation may resume driving after 6 months if there is no recurrence of symptoms, or sooner if no preexcitation or arrhythmias are induced on repeat electrophysiologic testing.
Prolonged, nonsustained ventricular tachycardia (VT)	No restrictions if the older adult is asymptomatic during documented episodes. Individuals with symptomatic VT may resume driving after 3 months if they are on antiarrhythmic therapy (with or without an ICD) guided by invasive electrophysiologic testing, and VT is noninducible at repeat electrophysiologic testing. They may resume driving after 6 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.[25]

Sustained ventricular tachycardia (VT)	Older adults may resume driving after 3 months if they are on antiarrhythmic therapy (with or without an ICD) guided by invasive electrophysiologic testing, and VT is noninducible at repeat electrophysiologic testing. Individuals may resume driving after 6 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.[25] Long-distance and/or sustained high-speed driving is not recommended. Older adults with VT should avoid the use of cruise control.[25]
Post-cardiac arrest	See the recommendations for sustained VT (above). For individuals who experience a seizure in the setting of cardiac arrest, see the recommendations for seizure disorder in Section 4, Neurologic Diseases. If clinically significant cognitive changes persist after the older adult's physical recovery, cognitive testing is recommended before the older adult is permitted to resume driving. In addition, on-road testing performed by a DRS may be useful in assessing an older adult's fitness to drive.
High-grade atrioventricular block	For symptomatic block managed with pacemaker implantation, see pacemaker recommendations in this section. For symptomatic block corrected without a pacemaker (e.g., by withdrawal of medications that caused the block), older adults may resume driving after they have been asymptomatic for 4 weeks and ECG documentation shows resolution of the block.
Sick sinus syndrome/sinus bradycardia/ sinus exit block/sinus arrest	No restrictions if the older adult is asymptomatic. Regular medical follow-up is recommended to monitor progression. For symptomatic disease managed with pacemaker implantation, see pacemaker recommendations in this section. Clinicians should be alert to possible cognitive deficits due to chronic cerebral ischemia. Clinicians may refer individuals with clinically significant cognitive changes to a DRS for an evaluation of driver safety, including on-road assessment.
Cardiac disease resulting from structural or functional abnormalities	A main consideration in determining medical fitness to drive for older adults with abnormalities of cardiac structure or function is the risk of presyncope or syncope due to low cardiac output, and of cognitive deficits due to chronic cerebral ischemia. Older adults who experience presyncope, syncope, extreme fatigue, or dyspnea at rest or at the wheel should cease driving. Cognitive testing is recommended for those individuals with a history of cognitive impairment that may impair the older adult's driving ability. Clinicians may refer individuals with clinically apparent cognitive changes to a DRS for a comprehensive driving evaluation.[1]

Congestive heart failure with low output syndrome	Older adults should not drive if they experience symptoms at rest or while operating a motor vehicle. Clinicians should reassess older adults for driving fitness every 6 months to 2 years as needed, depending on clinical course and control of symptoms. Individuals with functional class III congestive heart failure (marked limitation of activity but no symptoms at rest, working capacity 2 to 4 metabolic equivalents (METS) should be reassessed at least every 6 months.
Hypertrophic obstructive cardiomyopathy	OIder adults who experience syncope or presyncope should not drive until they have been successfully treated.
Valvular disease (especially aortic stenosis)	Older adults who experience syncope or presyncope 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 older adult's recovery from both the procedure itself and the underlying disease for which the procedure was performed.
Percutaneous transluminal coronary angioplasty (PTCA)	Older adults may resume driving 48 hours to 1 week after successful PTCA and/or stenting procedures, depending on their baseline condition and course of recovery from the procedure and underlying coronary disease.[25,26]
Pacemaker insertion or revision	Older adults may resume driving 1 week after pacemaker implantation if no longer experiencing presyncope or syncope: a. ECG shows normal sensing and capture, and b. Pacemaker performs within manufacturer's specifications.[26]
Cardiac surgery involving median sternotomy	Driving may usually resume 4 weeks after coronary artery bypass grafting (CABG) and/or valve replacement surgery, and within 8 weeks after heart transplant, depending on resolution of cardiac symptoms and the individual's course of recovery. In the absence of complications during or after surgery, the main limitation to driving is the risk of sternal disruption after median sternotomy. If cognitive changes persist after the older adult's physical recovery, cognitive testing is recommended before the individual is permitted to resume driving. In addition, on-road testing performed by a DRS may be useful in assessing the older adult's fitness to drive.
Internal cardioverter defibrillator (ICD)	See the recommendations for non-sustained and sustained ventricular tachycardia (2.c and 2.d in this section). If the device is used for primary, rather than secondary, prevention, driving may resume in 1 week if the older adult is subsequently symptomatic.[27]

SECTION 3: CEREBROVASCULAR DISORDERS

1. Post intracranial surgery
2. Stroke
3. Transient ischemic attacks
4. Subarachnoid hemorrhage
5. Vascular malformation
6. Syncope

Strokes and other insults to the cerebrovascular 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 person is affected uniquely, the clinician must take into account the individual older adult's constellation of symptoms, severity of symptoms, course of recovery, and baseline function when making recommendations concerning driving. Studies have indicated that a substantial number of community-dwelling stroke patients continue to drive a car.[28] However, most stroke patients may not receive any type of formal driving evaluation but simply resume driving.[29] If present, the larger a homonymous visual field defect, the greater the likelihood of losing one's license. Unfortunately, many individuals may not be aware of this deficit.[30]

Driving should always be discussed before the older adult's discharge from the hospital or rehabilitation center and the discussion documented in the health record.

Older adults with residual neurologic deficits who wish to resume driving should be referred to a DRS whenever possible. Although the time frame for this evaluation depends on the severity and extent of the deficits, many evaluations for cognitive and motor defects are performed between 3 and 6 months. Once symptoms have stabilized, the DRS should assess the older adult for fitness-to-drive through a comprehensive driving evaluation that includes clinical and on-road components. After assessment, the DRS may recommend compensatory techniques and/or adaptive devices (e.g., wide rearview mirror, spinner knob for steering wheel, left foot accelerator) and provide training in their use. Even individuals with mild deficits should undergo driver evaluation before resuming driving, if possible. Research indicates that a post-stroke determination of driving safety made on a medical basis alone may be inadequate.[31] Several 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.[32-34]

For older adults whose symptoms clearly preclude driving, it should not be assumed that the individual is aware that he or she should not drive. In such cases, the clinician should counsel the older adult on driving cessation and document the discussion in the health record. Recovery from stroke may take up to a year and even though the older adult may not be able to drive within the first 3–6 months, it is possible that he or she may improve after a year to have the potential to drive.[35-37]

Table 9.3 - Cerebrovascular Disorders

Post intracranial surgery	Older adults should not drive until symptoms of the disease and/or surgery have stabilized or resolved. See also stroke recommendations below (Section 3.2).
Stroke	Older adults with acute, severe motor, sensory, or cognitive deficits should not drive. Depending on the severity of residual symptoms and the degree of recovery, this restriction may be permanent or temporary. On the individual's discharge from the hospital or rehabilitation center, clinicians may recommend temporary driving cessation until further neurologic recovery has occurred. Once neurologic symptoms have stabilized, clinicians should refer appropriate individuals with residual sensory loss, cognitive impairment, visual field defects, and/or motor deficits to a DRS for driver assessment and rehabilitation. The DRS may prescribe vehicle adaptive devices and train the older adult in their use. Older adults with neglect or inattention should be counseled not to drive until symptoms have resolved and/or safe driving ability has been demonstrated through assessment by a DRS. All individuals 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, older adults should still undergo a comprehensive driving evaluation, if available, because reaction time may continue to be affected and other comorbid conditions could further increase risk. Individuals with aphasia who demonstrate safe driving ability may fail in their efforts to renew their license because of difficulties with the written examination. In these cases, the clinician should urge the licensing authority to make reasonable accommodations for the older adult's language deficit. A DRS 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. Older adults with residual cognitive deficits should be assessed and treated as described in Section 4 on Dementia. Periodic reevaluation of these individuals is recommended, because some may recover sufficiently over time or with appropriate intervention to permit safe driving.
Transient ischemic attacks (TIA)	Older adults who have experienced a single TIA or recurrent TIAs should not drive until they have undergone medical assessment and appropriate treatment.
Subarachnoid hemorrhage	Older adults should not drive until symptoms have stabilized or resolved. Driving may resume after medical assessment and, if deemed necessary by the clinician, driver evaluation, including on-road assessment, performed by a DRS.
Vascular malformation	If a brain aneurysm or arteriovenous malformation is detected, the older adult should not drive until he or she has been assessed by a neurosurgeon. The individual may resume driving if the risk of a bleed is small, an embolization procedure has been successfully completed, and/or the individual is free of other medical contraindications to driving (e.g., uncontrolled seizures or significant perceptual or cognitive impairments).

Syncope

Although the cause of syncope is often not identified, neurocardiogenic (or reflex mediated), orthostatic, and cardiac arrhythmia are among the most common causes when one can be found.[38,39] In a case-control study of patients evaluated for syncope, neurally mediated and cardiac arrhythmia were the most common causes when one could be identified. Long-term survival and likelihood of recurrence were similar for those who had syncope while driving versus those who did not.[40]

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 anticipated likelihood of recurrence. No driving restrictions are necessary for individuals with infrequent syncope that occurs with warning and with clear precipitating causes. Older adults 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).[41] For individuals who continue to experience unpredictable symptoms after treatment with medications and pacemaker insertion, driving cessation is recommended.

SECTION 4: NEUROLOGIC DISORDERS

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 disease
9. Peripheral neuropathy
10. Seizure disorder
    a. Single unprovoked seizure
    b. Withdrawal or change of anticonvulsant drug therapy
11. Sleep disorders
    a. Narcolepsy
    b. Sleep apnea
12. Stroke
13. Tourette syndrome
14. Vertigo

Dementia deserves special emphasis, because it presents a significant challenge to driving safety. As the disease progresses, individuals will ultimately lose the ability to drive safely. In addition, older adults with dementia often lack insight into their deficits and, therefore, 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 unsafe. In this case, it becomes the responsibility of family members and other caregivers to protect the safety of older adult drivers with dementia by enforcing driving cessation when this becomes necessary.

Several reviews on this topic may be of interest to clinicians.[42-45] Fitness-to-drive studies in older adults with dementia indicate that 90% may be able to pass a road test in the very mild stages of the disease (clinical dementia rating of 0.5), whereas 40% may fail at a mild level of cognitive impairment (clinical dementia rating of 1.0).[46] Furthermore, most older adults with Alzheimer disease will eventually fail subsequent road tests when followed longitudinally, indicating that repeat testing at 6–12 months should be strongly considered.[47]However, there is uncertainty about

prospective risk, at least in the near term. In one longitudinal study, some mildly demented drivers not only passed a performance-based road test but also had an acceptable crash risk prospectively.[48] A recent systematic review found a small body of literature with inconsistent results for crash risk in dementia but more consistent demonstration of worse driving performance with increasing cognitive impairment.[49] Although in-office evaluation may not replace an on-road assessment,[50] classification rates may improve as evidence mounts for measures of relevant cognitive and other abilities.[51-52] In addition, a dementia and driving curriculum modeled after an earlier version of this guide has been shown to improve knowledge, attitudes, confidence, and behaviors for health professionals who deal with older adults with dementia.[53]

Although it is optimal to initiate discussions of driving safety with older adults and caregivers before driving becomes unsafe, dementia may be undetected and undiagnosed until late in the course of the disease. Initially, caregivers and clinicians may assume that the older adult's decline in cognitive function is a part of the "normal" aging process. Clinicians may also hesitate to screen for and diagnose dementia, because they feel that it is futile and that nothing can be done to improve the older adult's situation or slow disease progression. In addition, clinicians may be concerned about the amount of time required to effectively diagnose dementia and educate older adults and caregivers.[54] However, some individuals are able to achieve cognitive stability, at least for a time, with cholinesterase inhibitors or N-methyl-D-aspartate (NMDA) receptor antagonists. In addition, older adults 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 but should prompt a discussion about meeting transportation needs and eventual driving cessation.

Clinician reluctance to screen for dementia is unfortunate, because early diagnosis is the first step in promoting the driving safety of these individuals and allowing them to maintain out-of-home mobility regardless of driving status. The second step is intervention, which includes medications to slow or stabilize the course of the disease, counseling to prepare the older adult and caregivers for eventual driving cessation, and serial assessment of the individual's driving abilities. When assessment shows that driving may pose a substantial safety risk to the older adult, driving cessation is a necessary third step, along with consideration of other transportation options that allow the individual to maintain out-of-home mobility. With early planning, older adults and their caregivers can make a more seamless transition from driving to non-driving status.

Table 9.4 - Neurologic Disorders

Brain tumor	Driving recommendations should be based on the type of tumor, its location and rate of growth, type of treatment, presence of seizures, and presence of cognitive or perceptual impairments. Because of the progressive nature of some tumors, serial evaluations of the individual's fitness to drive may be needed. See also the stroke recommendations in Section 3.2. If the older adult experiences seizure(s), see the seizure disorder recommendations below (4.10 in this section).
Closed head injury	Older adults should not drive until symptoms or signs have stabilized or resolved. For individuals whose symptoms or signs resolve, driving may resume after medical assessment and, if deemed necessary by the clinician, a comprehensive driving evaluation (clinical and on road) performed by a DRS. Older adults with residual neurologic or cognitive deficits should be managed as described in Section 3. If the individual experiences seizure(s), 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 September 2011): • 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 stages of their illness.[55] 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. • Clinicians 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 older adults and their caregivers as early in the process as possible. When appropriate, older adults should be included in decisions about current or future driving restrictions and cessation; for older adults whose decision-making capacity is impaired, clinicians and caregivers must decide in the best interests of the patient. • Clinicians are recommended to perform a focused medical assessment that includes a history of any new impaired driving behaviors (e.g., new motor vehicle crashes, moving violations) from a family member or caregiver and an evaluation of cognitive abilities, including attention, executive function, information processing speed, judgment, memory, and visuospatial abilities. Clinicians should be aware that older adults 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 resources for state reporting laws.) • If concern exists that an older adult 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 a comprehensive driving evaluation (clinical and on

	road) performed by a DRS. Clinicians should encourage older adults with progressive dementia and their caregivers to begin planning early in the clinical course for eventual cessation of driving privileges by exploring alternative transportation options and developing a plan for how to maintain out-of-home mobility and activity participation.
Migraine and other recurrent headache syndromes	Individuals 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 PDI medication. Individuals without a typical aura preceding the acute attack may be at higher risk. *PDI medications:* barbiturates, narcotics, narcotic-like analgesics (see Section 13)
Movement disorders (eg, parkinsonism, dyskinesias)	If the clinician elicits complaints of interference with driving tasks or is concerned that the older adult's symptoms compromise his or her driving safety, referral to a DRS for a comprehensive driving evaluation (clinical and on road) is recommended.
Multiple sclerosis	Driving recommendations should be based on the type of symptoms and level of symptom involvement. Clinicians 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 comprehensive driving evaluation (clinical and on road) performed by a DRS may be useful in determining the ability to drive safely. Additionally, the DRS can recommend modification to the vehicle (e.g., hand controls, low-effort steering) that can extend the time for continued driving despite motor symptoms. Serial evaluations may be required as the individual's symptoms evolve or progress.
Paraplegia and quadriplegia	Referral to a DRS is necessary if the individual wishes to resume driving and/or requires a vehicle modified to accommodate him or her as a passenger. The DRS can recommend an appropriate vehicle and prescribe vehicle adaptive devices (e.g., low-resistance power steering and hand controls) and train the individual in their use. In addition, the DRS can assist the individual with ability to access the vehicle, including opening and closing car doors, transfer to the car seat, and independent wheelchair stowage, through vehicle adaptations and training. With spinal cord injury, referral should be fairly early in the process so caregivers can have the time needed to secure an appropriate vehicle, because not all vehicles are adaptable for this level of impairment.[56] Driving should be restricted until the individual demonstrates safe driving ability in the adapted vehicle.
Parkinson disease	Older adults with Parkinson disease may be at increased risk of driving difficulties because of motor, visual, and cognitive dysfunction.[57] Clinicians should base their driving recommendations on the level of motor, visual, and cognitive symptom involvement; the individual's response to treatment; and presence and extent of any medication adverse effects. (See Section 13 for specific recommendations on antiparkinsonian medications.) Serial physical and cognitive evaluations are recommended every 6–12 months because of the progressive nature of the disease.

If the clinician is concerned that dementia, vision, and/or motor impairments may affect the older adult's driving skills, a comprehensive driving evaluation (clinical and on road) performed by a DRS may be useful in determining the individual's fitness to drive.

The following recommendations were affirmed at the AOTA/NHTSA Expert Summit (March 2012) specific to Parkinson disease:[58]

1. Drivers with Parkinson disease who have mild motor disability as measured by low scores on the Unified Parkinson Disease Rating Scale (UPDRS) Part 3, and no or few risk factors (antiparkinsonian drugs, >75 years old) may be fit to drive. Individuals who fit this profile and those who are newly diagnosed with Parkinson disease are recommended to:

- Plan a baseline comprehensive driving evaluation by a medically trained DRS
- Because of the progressive nature of the disease, the individual should also:
  - Consider annual comprehensive driving evaluations.
  - Start planning for eventual driving cessation.
  - Seek consultation to develop a plan for use of alternative transportation options.
  - Start conversations with the family about retirement from driving.

2. For those with severe motor impairment and high disease severity (high UPDRS Part 3 scores) and multiple risk factors (e.g., decreased information processing speed, the highest risk score on the Useful Field of View, scoring 180 seconds or more on the Trails B, impaired contrast sensitivity, and scoring >7 seconds on the Rapid Pace Walk), recommendations include:

- Cessation of driving
- Reporting to the licensing agency as required/allowed by the jurisdiction
- Addressing transportation options for the individual and caregiver through consultation or support services

3. Research is in progress to provide better guidelines for the middle group (i.e., those individuals with mild to moderate motor disability and few to several risk factors). Recommendations for this group include:

- Strongly recommending a comprehensive driving evaluation by a medically trained DRS to provide opportunities for rehabilitation (e.g., behind-the-wheel training, compensatory strategies, adaptive devices, driving restrictions, and/or self-regulation)
- Providing strategies to address transitioning to non-driving (e.g., start conversations about driving retirement, caregiver involvement in driving retirement, consultation, and/or referral for counseling)
- Developing a mobility plan for driving cessation

Peripheral neuropathy

Lower extremity deficits in sensation and proprioception may be exceedingly dangerous for driving, because the driver may be unable to control the foot pedals. If deficits in sensation and proprioception are identified, referral to a DRS is recommended. The DRS may prescribe vehicle adaptive devices (e.g., hand controls in place of the foot pedals) and train the individual in their use.

Seizure disorder

The recommendations below (in this section only) are adapted from the Consensus Statements on Driver Licensing in Epilepsy, developed and agreed on in March 1992 by the American Academy of Neurology, American Epilepsy Society, and Epilepsy Foundation of America.[59] These recommendations are subject to each state's licensing requirements and reporting laws.

A patient with seizure disorder should not drive until he or she has been seizure-free for 3 months. This recommendation appears consistent with available data.[60]

This 3-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

Unfavorable modifiers:

- Noncompliance with medication or medical visits and/or lack of credibility
- Alcohol and/or drug abuse in the past 3 months
- Increased number of seizures in the past year
- Impaired driving record
- Structural brain lesion
- Non-correctable brain functional or metabolic condition
- Frequent seizures after seizure-free interval
- Prior crashes due to seizures in the past 5 years
- Single unprovoked seizure
- Vagal nerve stimulator implant for seizure control with extended adjustment period
- Three or more antiepileptic drugs necessary to achieve seizure control

Single unprovoked seizure

The patient should not drive until he or she has been seizure-free for 3 months.

This time period may be shortened with clinician 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 anticonvulsant drug therapy	The patient should temporarily cease driving during the time of medication withdrawal or change because of the risk of recurrent seizure and PDI effects of the medication. If the risk of recurrent seizure during medication withdrawal or change is significant, the patient should cease driving during this time and for at least 3 months thereafter. If the patient experiences a seizure after medication withdrawal or change, he or she should not drive for 1 month after resuming a previously effective medication regimen. Alternatively, the patient should not drive for 6 months if he or she refuses to resume this medication regimen but is seizure-free during this period.
Sleep disorders	
Narcolepsy	The older adult should cease driving once diagnosed but may resume driving after treatment when he or she no longer suffers excessive daytime drowsiness or cataplexy. Clinicians may consider using scoring tools such as the Epworth Sleepiness Scale to assess the individual's level of daytime drowsiness.[61]
Sleep apnea	See Section 10.
Stroke	See Section 3.
Tourette syndrome	In evaluating the older adult's fitness to drive, clinicians should consider any comorbid disorders (including attention deficit hyperactivity disorder, learning disabilities, and anxiety disorder) in addition to the individual's motor tics. (For specific recommendations on these disorders, see Section 5, Psychiatric Disorders). If the clinician is concerned that the older adult's symptoms compromise his or her driving safety, referral to a DRS for a comprehensive driving evaluation (clinical and on road) is recommended. *PDI medications:* antipsychotics (see Section 13 for more information on medication adverse effects)
Vertigo	Older adults with acute vertigo should not drive until symptoms have fully resolved. Under no circumstances should the individual drive to seek medical attention. Older adults with a chronic vertiginous disorder are strongly recommended to undergo on-road assessment performed by a DRS before resuming driving. *PDI medications:* antivertigo agents (anticholinergic)

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/attention deficit hyperactivity disorder
7. Tourette syndrome

Older adults 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 adverse 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.[62]

Table 9.5 - Psychiatric Disorders

Affective disorders	Clinicians should advise older adults not to drive during the acute phase of illness. *PDI medications:* antidepressants (see Section 13 for information on differences among antidepressants)
Depression	No restrictions if condition is mild and stable. Clinicians should always specifically ask about suicidal ideation and cognitive and motor symptoms. Older adults should not drive if they are actively suicidal or experiencing significant mental or physical slowness, agitation, psychosis, impaired attention, and/or impaired concentration. Individuals should be counseled not to drive themselves to seek medical attention.
Bipolar disorder	No restrictions if condition is stable. Older adults should not drive if they are actively suicidal, depressed as in 1.a (above) or in an acute phase of mania. Individuals should be counseled not to drive themselves to seek medical attention.
Anxiety disorders	Older adults should not drive during episodes of severe anxiety. Otherwise, there are no restrictions if the condition is stable. *PDI medications:* benzodiazepines (see Section 13)

Psychotic illness	Clinicians should advise older adults not to drive during the acute phase(s) of illness. *PDI medications:* antipsychotics, benzodiazepines *Acute episodes:* Older adults should not drive during acute episodes of psychosis. Individuals with acute psychosis should be counseled not to drive themselves to seek medical attention. *Chronic illness:* No restrictions if the condition is stable.
Personality disorders	No restrictions unless the older adult has a history of driving violations and his or her psychiatric review is unfavorable. This includes, but is not limited to, uncontrolled, erratic, violent, aggressive, or irresponsible behavior. Because of the high comorbidity of substance abuse with personality disorders, clinicians are urged to be alert to substance abuse in these individuals and counsel them accordingly (see recommendations for substance abuse below).
Substance abuse	Driving while intoxicated is illegal and highly dangerous to the driver, passengers, and other road users. Impaired 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 impaired driving. Substances including, but not limited to, marijuana, cocaine, amphetamines (including amphetamine analogues), opiates, and benzodiazepines may also impair driving skills. Clinicians should query about prescription and/or nonprescription medication abuse as potential additional agents. Clinicians should follow up all positive screens with appropriate interventions, including brief interventions or referral to support groups, counseling, and substance abuse treatment centers. Clinicians 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 non-judgmental and supportive attitude and frequent follow-up may aid substance abusers in their efforts to achieve and maintain sobriety. Clinicians should also familiarize themselves with any state laws or regulations regarding detaining intoxicated individuals who have driven to the hospital or clinic until they are legally unimpaired.
Attention deficit disorder/attention deficit hyperactivity disorder	A review noted increased risk of driving behaviors and a positive effect of stimulant medications on driving performance.63 Clinicians should educate older adults about the increased risk associated with the disease and the potential benefits of treatment.
Tourette syndrome	See Section 4.

SECTION 6: METABOLIC DISORDERS

1. Diabetes mellitus
   a. Insulin dependent diabetes mellitus (IDDM)
   b. Non-insulin dependent diabetes mellitus (NIDDM)
2. Hypothyroidism
3. Hyperthyroidism

Older adults in the acute phase of a metabolic disorder (e.g., diabetes, Cushing disease, Addison disease, hyperfunction of the adrenal medulla, thyroid disorders) may experience signs and symptoms incompatible with safe driving. Clinicians should advise these individuals to refrain from driving (including driving to seek medical attention) until the symptoms have abated.

Data suggest that older adults with diabetes may be at increased risk of 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 of blood glucose levels, which could result in hypoglycemia and possibly increased crash risk.

Table 9.6 - Metabolic Disorders

Diabetes mellitus	
Insulin dependent diabetes mellitus (IDDM)	No restrictions if the older adult demonstrates satisfactory control of his or her diabetes, recognizes the warning symptoms of hypoglycemia, and meets required visual standards. The major concern is lack of awareness of hypoglycemia. Several studies have noted that individuals with type 1 IDDM had impaired driving performance during episodes of hypoglycemia and were unaware of their low blood glucose at the time of driving assessment.[64,65] It is apparent from these studies that many drivers did not take appropriate action even when they recognized the symptoms of hypoglycemia. Individuals with diabetes 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 lack of awareness of hypoglycemia (e.g., documented blood glucose below 60 mg/dL without symptoms). Older adults should be counseled not to drive during acute hypoglycemic or hyperglycemic episodes. In addition, older adults are advised to keep candy or glucose tablets within reach in their car at all times, in the event of a hypoglycemic attack. A 2012 American Diabetes Association position statement highlights important considerations in identification and management for individuals with diabetes at potential risk of driving difficulties.[66] For peripheral neuropathy, see Section 4. Older adults who experience recurrent hypoglycemic or hyperglycemic attacks should not drive until they have been free of significant hypoglycemic or hyperglycemic attacks for 3 months.

Non-insulin dependent mellitus (NIDDM)	Older adults who are managed by lifestyle changes and/or oral medications have no *diabetes* restrictions unless they develop relevant conditions (e.g., diabetic retinopathy). If the clinician prescribes an oral medication that has a significant potential to cause hypoglycemia, he or she should counsel the individual as for IDDM above. Oral medications may also increase the likelihood of hypoglycemia, which should be managed as in 1.a in this section.
Hypothyroidism	Older adults who experience symptoms (e.g., cognitive impairment, drowsiness, 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 comprehensive driving evaluation (clinical and on road) performed by a DRS may be useful in determining the individual's ability to drive safely.
Hyperthyroidism	Older adults who experience symptoms (e.g., anxiety, tachycardia, palpitations) should be counseled not to drive until their hyperthyroidism has been satisfactorily treated and symptoms have resolved.

SECTION 7: MUSCULOSKELETAL DISORDERS

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 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

Pain, decreased motor strength, and compromised range of motion associated with musculoskeletal disorders can affect an individual's ability to drive. Clinicians should encourage older adults with musculoskeletal disorders to drive a vehicle with power steering and automatic transmission. Such vehicles require the least amount of motor ability for operation among all standard vehicles. If the clinician is concerned that the individual's musculoskeletal disorders impair his or her driving performance, referral to a DRS for a comprehensive driving evaluation (clinical and on road) is also recommended. In addition to assessing the older adult's driving skills, the DRS can prescribe compensatory techniques and adaptive devices and train the individual in their use.

Older adults with musculoskeletal disorders typically have problems with using the seat belt and ignition key, adjusting mirrors and seats, steering, transferring in and out of the car, driving in reverse, and using controls such as the foot pedals.[67] Driving

impairment has been correlated with the inability to reach above the shoulder.[68] Older adults with physical frailty or disabilities may be at increased risk of a crash[69,70] and are more likely to be injured.[71] Presence of foot abnormalities, walking less than one block a day, and impaired left knee flexion have been associated with adverse driving events.[71] In one study, older participants involved in a crash were more likely to have difficulty walking one-quarter mile than controls; increased crash risk for drivers with a history of falls was also noted.[72] A recent systematic review and meta-analysis found an association between fall history and crash risk.[73]

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.[74] In a Canadian longitudinal study, self-reported arthritis/rheumatism and back pain were associated with motor vehicle injuries.[75]

Conversely, individuals with a specific diagnosis of osteoarthritis were no more at risk of a crash than controls in one study.[76] Also reassuring was a study noting no increase in crash risk of drivers with cars that had been adapted for their musculoskeletal restrictions.[77] Improvements in relevant physical abilities and driving performance have been noted with a physical conditioning program.[78]

Older drivers are at increased risk of death and serious injury in motor vehicle crashes, in part because of age-related fragility.[79-81] Therefore, clinicians should advise older adults to avoid driving in potentially risky situations, such as making unprotected left turns, and driving in unfamiliar areas or on suburban highways.[82]

In sum, clinicians can play a role in diagnosing, managing, and referring older adults with musculoskeletal disorders, thereby helping to maintain driving privileges and improve traffic safety.

Rehabilitative therapies such as physical or occupational therapy and/or a consistent regimen of physical activity may improve the older adult'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 individuals with musculoskeletal disorders who wish to continue driving. See Section 13 for recommendations on specific classes of medications.

Table 9.7 - Musculoskeletal Disorders

Arthritis	If symptoms of arthritis compromise the older adult's driving safety, referral to a physical or occupational therapist for rehabilitative therapy and/or to a DRS for a comprehensive driving evaluation (clinical and on road) is recommended. The DRS may prescribe vehicle adaptive devices and train the individual 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 toenails, calluses) that affect the older adult'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. Older adults may also be referred to a DRS, who can prescribe vehicle adaptive devices and train the individual in their use.

Limitation of cervical movement	Some loss of head and neck movement is acceptable if the older adult has sufficient combined rotation and peripheral vision to accomplish driving tasks (e.g., turning, crossing intersections, parking, backing up) safely. The clinician may also refer the older adult to a physical or occupational therapist for rehabilitative therapy, and/or to a DRS, who can prescribe wide-angled mirrors and train the individual in their use.
Limitation of thoracic or lumbar spine	Older adults 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 DRS. The DRS can prescribe vehicle adaptive devices such as raised seats and wide-angled mirrors and train the individual in their use. The DRS can also prescribe seat belt adaptations as needed to improve the older adult's safety and comfort and to ensure that the individual is seated at least 10 inches from the vehicle air bags. Older adults 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 may 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 older adults who have lost (or lost the use) of one or more extremities, referral to a DRS is highly recommended. The DRS can prescribe vehicle adaptive devices and/or adaptations to limb prostheses, and train the individual in their use. For example, those who have loss of the right lower extremity may be able to use a left foot accelerator. For those with an absent, amputated or non-functioning hand, a spinner knob may be recommended. The use of artificial limbs on vehicle foot pedals is unsafe because of the lack of sensory feedback (i.e., pressure and proprioception). For these individuals, specialized hand controls in place of pedals are required. Driving should be restricted until the older adult demonstrates safe driving ability (with the use of adaptive devices, as needed).
Muscle disorders	If the clinician is concerned that the older adult's symptoms compromise his or her driving safety, referral to a DRS for a comprehensive driving evaluation (clinical and on road) is recommended. If needed, the DRS may prescribe vehicle adaptive devices and train the individual in their use.
Orthopedic procedures/surgeries	
Amputation	See Loss of extremities (above).
Anterior cruciate (ACL) reconstruction	Individuals should not drive for 4 weeks after right ACL reconstruction. If the older adult drives a vehicle with manual transmission, he or she should not drive for 4 weeks after right or left ACL reconstruction.[83]

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 for any reason, such as the lack of sensory feedback (i.e., pressure and proprioception), the older adult may resume driving after the fracture heals or the splint/cast is removed, after demonstration of the necessary strength and range of motion.
Rotator cuff repair (open or arthroscopic)	Individuals should not drive for 4–6 weeks after rotator cuff repair. If the older adult's vehicle does not have power steering, the waiting period may be much longer. Clinicians should counsel individuals 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	Individuals should not drive for 4–6 weeks after shoulder reconstruction. If the older adult's vehicle does not have power steering, the waiting period may be much longer. Clinicians should counsel individuals 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	Individuals should not drive for at least 4 weeks after right total hip replacement. If the older adult drives a vehicle with manual transmission, he or she should not drive for at least 4 weeks after right or left total hip replacement. Clinicians should counsel older adults 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. Clinicians should also counsel individuals that reaction time may not return to baseline until 8 weeks after the surgery, and that they should exercise extra caution while driving during this period.[84] A recent study found that reaction time recovered in 2–4 weeks and postulated that new techniques may have contributed to the improvement.[85]
Total knee arthroplasty (TKA)	Individuals should not drive for 3–4 weeks after right TKA. If the older adult drives a vehicle with manual transmission, he or she should not drive for 3–4 weeks after right or left TKA. The clinician should also counsel individuals that reaction time may not fully return to baseline until 8 weeks after the surgery and that extra caution should be exercised while driving during this period.[86–91]

SECTION 8: PERIPHERAL VASCULAR DISORDERS

1. Aortic aneurysm
2. Deep vein thrombosis
3. Peripheral arterial aneurysm

Table 9.8 - Peripheral Vascular Disorders

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)	Older adults 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. Clinicians 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. Older adults 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 DISORDERS

1. Chronic renal failure
2. Time-limited restrictions: renal transplant

Table 9.9 - Renal Disorders

Chronic renal failure	No restrictions unless the older adult experiences symptoms incompatible with safe driving (e.g., cognitive impairment, impaired psychomotor function, seizures, extreme fatigue from anemia). If the clinician is concerned that the individual's symptoms compromise his or her driving safety, referral to a DRS for a comprehensive driving evaluation (clinical and on road) is recommended. Many older adults with renal failure requiring hemodialysis can drive without restriction. However, management of renal failure requires that the older adult be compliant with substantial nutrition and fluid restrictions, frequent medical evaluations, and regular hemodialysis treatments. Individuals with a history of noncompliance should be advised against driving. Furthermore, certain medications used to treat adverse effects of hemodialysis may be substantially impairing (e.g., diphenhydramine for dialysis-associated pruritus), and dialysis itself may result in hypotension, confusion, or agitation in many people. These effects may require that older adults avoid driving in the immediate post-dialysis period.
Renal transplant	Older adults may resume driving 4 weeks after successful renal transplant on the recommendation of the physician.

SECTION 10: RESPIRATORY AND SLEEP DISORDERS

1. Asthma
2. Chronic obstructive pulmonary disease (COPD)
3. Sleep apnea

"Drowsy driving" or driving with fatigue or sleepiness is a common cause of 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.[92] Sleep disorder crash risk may be increased further by medication use, such as narcotics or antihistamines.[93] Individuals with sleep apnea have been noted to have as high as a 7-fold increased crash risk compared with controls depending on the study.[94] Individuals with these disorders may also be at increased risk of injurious crashes.[95] This topic has been extensively reviewed elsewhere.[1] Obstructive sleep apnea is one of the few medical conditions for which treatment has been shown to return crash risk to baseline levels.[96] In addition, recent studies indicate a high prevalence of sleep disorders or daytime sleepiness in older adults[97] and in individuals with diabetes.[98] However, in the case of older adults, the effect on driving safety is unclear.[99]

Table 9.10 - Respiratory and Sleep Disorders

Asthma	No restrictions. Older adults should be counseled not to drive during acute asthma attacks, or while suffering transient adverse effects (if any) from asthma medications.
Chronic obstructive pulmonary disease (COPD)	No restrictions if symptoms are well controlled, and the older adult does not experience any significant adverse effects from the condition or medication. The older adult should not drive if he or she suffers dyspnea at rest or at the wheel (even with the use of supplemental oxygen), excessive fatigue, or significant cognitive impairment. If the older adult requires supplemental oxygen to maintain a hemoglobin saturation of ≥90%, he or she should be counseled to use the oxygen at all times while driving. Because of the often tenuous oxygenation status of these individuals, 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). The following recommendations were affirmed at the AOTA/NHTSA Expert Summit (March 2012) specific to COPD:[56] • When an individual has COPD, a referral for a driving evaluation is indicated if any of the following conditions are present: (1) cognitive decline is evident with either psychometric testing or while performing other ADLs (e.g., impaired attention,

fatigue, hypersomnolence); (2) concern is raised about driving safety through direct observation, family concern, or driving incidents; (3) the individual has difficulty maintaining oxygen saturation of at least 90% at rest; (4) when the individual experiences dyspnea at rest or while behind the wheel; and (5) when the individual's motor vehicle needs modification for loading a powered mobility device (wheelchair or scooter) or oxygen containers need to be secured in the vehicle.

- When an individual has COPD, the DRS should monitor oxygen saturation while driving to measure the effects of driving tasks on oxygen levels in the blood. This information can be used to verify the need to drive with oxygen to improve cognition, as well as heart and other organ functioning. Pulse oximetry is also an effective tool to demonstrate the effects that energy conservation (vehicle features, arm position, etc.) and breathing techniques have while driving.
- When an individual has COPD, the DRS can provide guidance on overall driving skills and safety, including driving limits and compensatory techniques, as well as assistance with loading devices for power mobility devices, and oxygen storage.
- Community mobility should be addressed with every occupational therapy patient as part of the initial evaluation and most importantly as part of discharge planning.

Because COPD is often progressive, periodic reevaluation for symptoms and oxygenation status is recommended.

If the clinician is concerned that the older adult's symptoms compromise his or her driving safety, referral to a DRS for a comprehensive driving evaluation (clinical and on road) is recommended. The individual's oxygen saturation may be measured during the course of the on-road assessment to provide additional information for management.

Sleep apnea

Older adults with excessive daytime sleepiness, loud snoring (particularly if accompanied by witnessed apneic events), large neck circumference (≥16 inches in women, ≥17 inches in men), increased body mass index (>35 kg/m2), and/or hypertension that requires two or more medications should be considered at risk of obstructive sleep apnea, and formal sleep study evaluation should be considered, especially in any individual who reports having fallen asleep while driving a vehicle. A person diagnosed with sleep apnea (apnea/hypopnea index ≥5) who has fallen asleep while driving, or a person with severe obstructive sleep apnea (apnea/hypopnea index of ≥30) should be counseled to refrain from driving until he or she is receiving effective treatment (via a positive airway pressure device) after a formal sleep study to confirm the diagnosis. If these individuals undergo other treatments (surgery, oral appliances), they should be advised to have a post-treatment sleep study to confirm effectiveness. Clinicians should counsel older adults prescribed 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., after 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

Clinicians should be alert to peri- and postoperative risk factors that may affect the older adult's cognitive function after surgery, or restrictions on limb movement or joint range of motion that place the individual at risk of impaired driving performance. Risk factors include:

- Preexisting cognitive impairment
- Duration of surgery
- Age (>60 years old)
- Altered mental status after surgery
- Presence of multiple comorbidities
- Emergency surgery

If the clinician is concerned that residual visual, cognitive, or motor deficits after surgery may impair the older adult's driving performance, referral to a DRS for a comprehensive driving evaluation (clinical and on road) is highly recommended.

Clinicians should counsel older adults who undergo surgery—both inpatient and outpatient—not to drive themselves home after 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, see Sections 7 and 13, respectively.)

In counseling older adults about their return to driving after a surgical procedure, clinicians may find it useful to ask whether the individual's car has power steering and automatic transmission. Advice can then be tailored accordingly.

As older adults resume driving, they should be counseled to assess their comfort level in familiar, traffic-free areas before driving in heavy traffic. Those who feel uncomfortable driving in certain situations should avoid these situations until their confidence level has returned.

Older adults should never resume driving before they feel ready to do so and have received approval from the clinician.

Table 9.11 - Effects of Anesthesia and Surgery

Abdominal, back, chest and surgery	Older adults may resume driving after demonstrating the needed strength and range of motion. 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, older adults should not resume driving until the motor and cognitive effects from all anesthetic agents have subsided.
General	Both the surgeon and anesthesiologist should advise older adults 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 older adult should not drive until he or she has recovered full strength and sensation (barring pain).
Epidural	Older adults may resume driving after recovering full strength and sensation (barring pain) in the affected areas.
Spinal	Older adults 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 recommendations for orthopedic procedures/surgeries in Section 7.

SECTION 12: CANCER

Table 9.12 - Cancer

Cancer	Older adults 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 adverse effects of cancer treatment (e.g., antiemetics for nausea) may impair driving performance. Clinicians should counsel older adults accordingly. (See Section 13 for recommendations for specific medications.)

SECTION 13: MEDICATIONS

1. Anticholinergics
2. Anticonvulsants
3. Antidepressants
4. Antiemetics
5. Antihistamines
6. Antiparkinsonian agents
7. Antipsychotics
8. Benzodiazepines and nonbenzodiazepine hypnotics
9. Muscle relaxants
10. Narcotic analgesics

As described in the previous sections of this chapter, medications may promote safe driving in older adults through adequate management of medical conditions and better physical functioning. However, many commonly used prescription and over-the-counter medications may impair driving by adversely affecting the cognitive, visual, and/or motor abilities needed for safe driving. In general, any drug with a prominent effect on the central nervous system (CNS) has the potential to impair an individual's ability to operate a motor vehicle. The level of impairment varies from person to person and between different medications within the same therapeutic class.

Expert panels convened by NHTSA to develop a list of safe and unsafe drugs with regard to driving were not able to develop a conclusive list and were only able to comment on the potential impact of various medications.[100] This difficulty stems from inconsistent research findings, lack of a standardized protocol for assessing the potential for medications to impair driving, and the difficulty in distinguishing the impact of the medical condition from the impact of the medication itself that is used to treat the medical condition on driving safety.[100] For studies that have taken into account both the medical condition and the medications used to treat the condition, the impact of the medical condition on crash risk is much stronger than that of the medication.[100] Thus, this section discusses PDI medications based on information from observational studies examining risk of crashes; from experimental studies assessing driving performance, as tested in different actual driving tests or driving simulator tests; and/or from the known adverse effect profile of the medication. Some PDI medications are included based on adverse-effect profile alone, because research evidence is not available delineating risk of traffic crashes.

The most common PDI medications include the anticholinergics, anticonvulsants, antidepressants, antiemetics, antihistamines, antipsychotics, barbiturates, benzodiazepines/hypnotics, muscle relaxants, and narcotic analgesics.[101-103] Of these medication classes, sedative/hypnotics (e.g., benzodiazepines, zolpidem) have been subject to the most scrutiny, and studies have consistently found higher risk of traffic crashes associated with their use in older adults.[102-105] Increased risk of traffic crashes is especially prominent when medications are newly initiated.[104-106]

Older adults often take multiple medications concurrently, with approximately 36% using five or more prescription medications.[107] Furthermore, older adults often take multiple CNS-active medications, with 25% taking two or more classes.[108] Crash risk is likely to increase with use of multiple PDI medications[109] or concomitant use with alcohol. Table 9.13 summarizes the common PDI medications and the specific adverse effects (cognitive, visual, and motor abilities) that may contribute to impaired driving. Adverse effects on cognition include fatigue, sedation/sleepiness, light-headedness, dizziness, or global cognitive impairment (e.g., impaired judgment, attention, psychomotor speed). Medications that cause tremor, dyskinesias,

or extrapyramidal symptoms may impair motor ability needed for driving. A history of falls has been associated with an increased crash risk, and medications with CNS effects are known risk factors for falls. Medications that cause drowsiness, euphoria, and/or anterograde amnesia may also diminish insight, and older adults may experience impairment without being aware of it (e.g., benzodiazepines, narcotics, antihistamines).[110-113]

This list of medications is not exhaustive. Other medication classes, such as oral hypoglycemics and antihypertensives, may cause dizziness or impaired cognition if the individual is hypoglycemic or blood pressure is too low, respectively. Furthermore, any medication adverse effect (e.g., nausea) that reduces the ability to concentrate could potentially impair driving.

Table 9.13 - Potentially Driver-Impairing (PDI) Medications

Medication Class	PDI Symptom
Anticholinergics	Sedation, blurred vision, impaired cognition
Anticonvulsants	Sedation, impaired cognition
Antidepressants	
Tricyclics (tertiary more impairing then secondary)	Sedation, blurred vision, impaired cognition, tremor, heart palpitations
Selective serotonin reuptake inhibitors (SSRIs)	Impaired concentration, lightheadedness, tremor
Others	
Duloxetine	Sedation
Mirtazapine	Sedation
Bupropion	Insomnia (leading to next day somnolence)
Antihistamines (first generation and cetirizine)	Sedation, blurred vision, impaired cognition
Antiparkinson agents	All classes may cause sedation.
Dopamine agonists, levodopa, Anticholinergics	Medication-specific adverse events: sleep-attacks (most likely with dopamine agonists), dyskinesias (most likely with levodopa)
Antipsychotics	Sedation, blurred vision, impaired cognition, extrapyramidal symptoms, (to varying extent among agents)
Benzodiazepines/sedatives	Sedation, clumsiness, dizziness, impaired vision, impaired cognition
Muscle relaxants	Sedation, blurred vision, impaired cognition
Opioid analgesics	Sedation, lightheadedness, impaired vision
Other agents	
Antihypertensives	Dizziness (low blood pressure) CNS effects (guanfacine, reserpine, methyldopa, clonidine)
Hypoglycemics	Symptoms of hypoglycemia (shakiness, impaired concentration, lightheadedness)
Indomethacin	CNS effects

Clinicians should be aware of the PDI risk and attempt to use the safest class of medication when possible. It is difficult to know whether increased risk of impaired driving is associated with the drug (e.g., antidepressant), the disease itself (e.g., depression, which may independently impair attention, judgment), or a drug-drug interaction.[102] Because of age-related changes in pharmacokinetics (e.g., reduced renal function) and pharmacodynamics, older adults may begin to have adverse effects to medications that they have tolerated well for many years, which may make it difficult to ascertain the cause of new PDI symptoms.

ALCOHOL INTERACTION WITH MEDICATIONS

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 ability in many individuals. Because of age-related changes in body composition (e.g., increased body fat and decreased 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, older adults may be impaired without being aware of it. Furthermore, alcohol can potentiate the CNS effects of PDI medications to produce profound and dangerous levels of impairment. Clinicians should always warn older adults against drinking and driving, and against combining alcohol and their CNS-active medications.

MARIJUANA USE

Prevalence of marijuana use is low in older adults, at 1.3-2%.[114,115] However, with the increased acceptance of medicinal cannabis and legalization of marijuana for recreational use, it is likely this prevalence of marijuana use will increase. In experimental studies conducted in younger individuals, marijuana is associated with negative effects on driving ability, including an increase in lane weaving, poor reaction time, and altered attention to the road.[116-118]

Although not well studied, the potential exists for medications that are strong inhibitors of CYP3A4 and CYP2C9 enzymes in the liver to result in higher concentrations of marijuana components in the blood. Moderate-strength evidence from a recent meta-analysis of 21 multinational observational studies suggests that acute cannabis intoxication is associated with a moderate increase in collision risk (odds ratio, 1.35 [CI, 1.15 to 1.61]).[119]

GENERAL PRESCRIBING PRINCIPLES

It may not be possible to avoid use of PDI medications in older adults; however, several general prescribing principles can be considered to minimize risk.

1. Whenever possible, clinicians should select non-impairing medications.

2. When prescribing new medications, clinicians should always consider the individual's existing regimen of prescription and nonprescription medications and consider risk of additive PDI medications. Combinations of drugs may affect drug metabolism and excretion, and produce additive or synergistic interactions to impair driving ability.

3. Clinicians should add new medications at the lowest dosage possible, counsel the older adult to be alert to any impairing effects, and adjust the dosages as needed to achieve therapeutic effects while minimizing driving impairment. For individuals on multiple PDI medications, it is wise to start with low doses of each and gradually increase the dosage of each one at a time to minimize substantial undesirable effects.

4. Older adults should be regularly assessed for PDI symptoms during follow-up visits.

5. If medication therapy is initiated while the older adult is hospitalized, the impact of adverse effects on driving performance should be discussed before discharge.

6. These precautions and discussions should be documented in the health record.

7. If there is a question of cognitive or motor impairment, whether or not due to medications, the clinician should consider referral to a DRS for a driver evaluation (potentially including on-road assessment).

COUNSELING CONSIDERATIONS

The following counseling points are important to consider when a new PDI medication is started, or the dosage of an existing PDI medication is increased.

1. Inform the older adult and caregivers about the specific effects of the medication, so that they know what to expect and can self-monitor for adverse events that may affect driving.

2. Advise the older adult and caregivers to take the first few doses in a safe environment to determine the presence and extent of any adverse effects. Individuals should be advised not to drive during the initial phase of PDI dosage adjustment(s) if they experience drowsiness, lightheadedness, or other undesirable effects that may impair driving performance.

3. Inform the older adult and caregivers that some medications that cause drowsiness, euphoria, and/or anterograde amnesia may also diminish insight (benzodiazepines, antihistamines, narcotics), and that the individual may experience impairment without being aware of it.

4. Discourage the use of alcohol while driving and inform the older adult and caregivers about the potential for exacerbation of the PDI effects of certain medications with concomitant alcohol use.

Table 9.14 - Medications

Refer to Table 9.13 for a full list of the PDI symptoms for each of the medication classes discussed below.

Anticholinergics	Many prescription and over-the-counter medications have anticholinergic effects (see reference for a full list).[120] These include several medication classes such as antidepressants (e.g., tricyclic antidepressants and paroxetine), medications for overactive bladder (e.g., oxybutynin, tolterodine, trospium, darifenacin), first-generation antihistamines used for allergies, insomnia, and/or vertigo (e.g., chlorpheniramine, dimenhydrinate, diphenhydramine, doxylamine), skeletal muscle relaxants (e.g., cyclobenzaprine), gastrointestinal antispasmodics (e.g., belladonna alkaloids, atropine, hyoscyamine), certain antipsychotics (e.g., chlorpromazine, clozapine, olanzapine), and antiparkinsonian agents (e.g., trihexyphenidyl). In most cases, therapeutic alternatives to anticholinergic medications are available. Subtle deficits in attention, memory, and reasoning may occur with therapeutic dosages of anticholinergic drugs without signs of overt toxicity. Delirium can also occur in older adults.

Table 9.14 - Medications/cont.

Anticonvulsants	Older adults should temporarily cease driving during the time of medication initiation, withdrawal, or dosage change because of the risk of recurrent seizure and/or potential medication effects that may impair driving performance. If there is significant risk of recurrent seizure during medication withdrawal or change, the older adult should not drive during this time and for at least 3 months thereafter. Many anticonvulsants (e.g., valproic acid, carbamazepine, gabapentin, lamotrigine, topiramate) are also used as mood stabilizers for treatment of bipolar disorder, for agitation in dementia, as sedating agents for anxiety, and to treat pain syndromes. These agents may be used as an adjunct to antidepressants, antipsychotics, and/or anxiolytics. By themselves, anticonvulsants may be mildly impairing, but when combined with other PDI medications, the effects on psychomotor performance may be enhanced. Furthermore, some anticonvulsants are primarily eliminated by the kidneys and increased CNS adverse effects may be observed with renal impairment. Thus, dose reductions are recommended when estimated creatinine clearance is <60 mL/min for pregabalin and gabapentin and <80 mL/min for levetiracetam.[120]
Antidepressants	In general, increased crash risk has been associated with many classes of antidepressants, even though the magnitude and extent of PDI adverse events vary between them. In general, the selective serotonin reuptake inhibitors (SSRIs) are first-line agents for depression and anxiety disorders because of their good tolerability, including a lower risk of CNS depressant adverse effects. Tricyclic antidepressants with high anticholinergic effects are not advised for those who wish to continue driving. Mirtazapine, a more sedating antidepressant, is typically taken only at night to avoid excessive daytime sedation. Duloxetine, a serotonin-norepinephrine reuptake inhibitor used for depression, chronic pain, fibromyalgia, and anxiety disorders, may also cause sedation and other CNS effects.
Selective serotonin-reuptake inhibitors (SSRIs)	SSRIs are commonly prescribed agents to treat depression and anxiety. Paroxetine is unique in that it has anticholinergic effects, so may be more likely than the other SSRIs (e.g., sertraline, citalopram) to impair driving. Although adverse effects tend to be mild and well tolerated, clinicians should counsel older adults to be alert to the potential of SSRIs to affect driving performance. Special mention is made of the serotonin syndrome, wherein mental status changes, autonomic hyperactivity, and neuromuscular adverse effects are observed due to excessive amounts of the drug, taking multiple drugs that increase serotonin, or a drug-drug interaction.
Tricyclic antidepressants (TCAs)	Better tolerated agents have replaced TCAs for depression; however, they are still used to manage sleep, menopausal symptoms, neuropathic pain, incontinence, and migraines. The tertiary tricyclic antidepressants (amitriptyline, doxepin, imipramine) have strong anticholinergic effects and may impair driving. If a TCA is needed, nortriptyline and desipramine have lower anticholinergic effects and are preferred but are still not recommended for use in older adults.[120] See Anticholinergics in this section.

Antiemetics	Numerous classes of drugs (some of which include anticholinergics, antihistamines, antipsychotics, cannabinoids, and benzodiazepines) are used for their antiemetic effect. For more information, see Anticholinergics, Antihistamines, and Benzodiazepines in this section.
Antihistamines	The first-generation antihistamines (e.g., diphenhydramine, chlorpheniramine) have pronounced CNS effects and impair psychomotor performance, simulated driving, and on-road driving.[102] In contrast, most second-generation antihistamines (i.e., nonsedating) do not produce these types of impairments when taken in recommended doses, except for cetirizine. Nonsedating antihistamines (e.g., loratadine, fexofenadine) are preferred if an antihistamine is needed for allergy treatment; however, even these agents may cause impairments if taken in higher than recommended doses. See Anticholinergics in this section.
Antiparkinson agents	The mainstay of treatment for Parkinson disease is levodopa, dopamine agonists (e.g., pramipexole, ropinirole), amantadine, and anticholinergics (e.g., trihexyphenidyl). Individuals with Parkinson disease are already at risk of excessive daytime somnolence, but treatment with these medications can further contribute to this symptom. Individuals taking antiparkinsonian agents have reported sudden, unexpected lapses of attention and falling asleep, known as "sleep attacks." The risk of sleep attacks seems greatest with use of dopamine agonists, but may occur with any therapy.[121,122]
Antipsychotics	Most, if not all, antipsychotic medications have a strong potential to impair driving performance through cognitive, visual, and motor effects. Most antipsychotics used in the outpatient setting are second-generation (atypical) antipsychotics. Second-generation antipsychotics have varying degrees of anticholinergic and sedative effects, with clozapine having the most pronounced effects. These agents also cause varying degrees of extrapyramidal effects that may impair psychomotor performance, with risperidone, lurasidone, and ziprasidone having the most pronounced effects.
Benzodiazepines and nonbenzodiazepine hypnotics	Studies have demonstrated impairments in vision, attention, motor coordination, and driving performance with benzodiazepine use. Evening doses of long-acting benzodiazepines (e.g., flurazepam, diazepam) markedly impair psychomotor function the following day, while comparable doses of short-acting benzodiazepines produce a lesser impairment.[102] Zolpidem, eszopiclone, and zaleplon are nonbenzodiazepine hypnotics. Zolpidem has been associated with driving at night without recollection the next morning and increased crash risk.[104] Women and older adults have higher blood concentrations of zolpidem; therefore, the maximum dose is lower for these patient groups (5 mg of regular release zolpidem). Less information exists about eszopiclone, but it has a duration of action similar to that of zolpidem, so the same cautions should apply. Zaleplon has a short half-life and is used for sleep-onset difficulties and is unlikely to impair next day driving. Trazodone, an antidepressant often used as a sedative, has been associated with increased crash risk.[104] In general, it is recommended to avoid benzodiazepines and nonbenzodiazepine hypnotics in older adults because of the risk of several adverse health outcomes, including increased risk of car crashes.[120] However, if hypnotics are needed, evening doses of short-acting hypnotics

Table 9.14 - Medications/cont.

	are preferred with periodic attempts to discontinue therapy. Individuals taking hypnotics should allow enough time to sleep after the dose (approximately 8 hours) before driving. Older adults who take daytime doses of benzodiazepines (for anxiety) should be advised of the potential for impairment, even in the absence of subjective symptoms.
Muscle relaxants	Most skeletal muscle relaxants (e.g., carisoprodol and cyclobenzaprine) have significant CNS effects. Long-term use should be avoided.
Narcotics analgesics	Tolerance may develop to many of the CNS effects of narcotic analgesics, but the visual impairment may persist. Impaired driving with narcotics may be most prominent with initial therapy or with dose increases. Meperidine may have a higher risk of neurotoxicity compared with other narcotics, and in general should be avoided in older adults.[120] Individuals should be monitored for frequency of use, tolerance, and dependence. Clinicians should always be alert to signs of abuse. (For more information, see the recommendations for substance abuse in Section 5.)

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CHAPTER 10 MEETING FUTURE TRANSPORTATION NEEDS OF OLDER ADULTS

KEY POINTS

- Transportation planning discussions should begin early and be revisited often.
- A holistic approach that incorporates assessment and intervention and that facilitates the transition to driving limitation or cessation when necessary is encouraged.
- A tiered assessment strategy offers potential advantages for gauging risk in clinical offices and licensing agencies, although more evidence is needed regarding content, efficiency, and effectiveness.
- Clinicians should be aware of and use driving evaluation resources in their area, including driving rehabilitation specialists (DRS's).
- As new technologies are developed, their role in enhancing safety of older adult drivers, passengers, and pedestrians should be assessed.
- Clinician involvement and communication with driver licensing agencies should be encouraged and facilitated.
- Coordination among clinicians, licensing agencies, and relevant state/local/community agencies/organizations is encouraged to help older adults and their caregivers become aware of and able to access transportation resources in their community.

The previous chapters provide the clinical team with recommendations and tools for enhancing the driving safety of older adults. As in other aspects of patient care, however, further research will lead to more effective care. Further progress on the following would be beneficial:

- In-office tools that can help predict crash risk or determine fitness to drive
- Improved access to driver assessment and rehabilitation
- Training in the appropriate use of advanced technology in vehicles as these technologies evolve
- Safer roads
- Expansion of transportation alternatives
- Increased crashworthiness of vehicles
- Intervention trials to lower risk, maintain driving life expectancy, and/or improve driving safety

To accomplish these objectives, coordinated efforts among the health care and transportation communities, policymakers, community planners, the automobile industry, and government agencies are needed to achieve the common goal of safe transportation for the older population. As this population continues to expand and live longer, the challenge is to keep pace with its transportation needs. Although many transportation alternatives are developing (e.g., fully automated vehicles, golf cart communities, private car rideshare programs), review of the use of these by older adults is beyond the scope of this chapter.

This chapter discusses the research, initiatives, applications, and system changes deemed essential for improving driving safety of older adults.

VEHICLE DESIGNS TO OPTIMIZE SAFETY OF OLDER ADULT DRIVERS AND PASSENGERS

Age-related changes in vision, cognition, and motor ability may affect an individual's ability to enter/exit a motor vehicle with ease, assess critical driving information, and handle the complexities of a motor vehicle in traffic safely. Older adults are also less able to endure and recover from injuries sustained in an automobile crash. Vehicle manufacturers are encouraged to explore and implement enhancements in vehicle design to address and compensate for these physiologic changes, such as:

- Designs based on the anthropometric parameters of older adults (i.e., physical dimensions, strength, fragility, and range of motion) may be optimal for entry/exit; seating safety and comfort; seat belt/restraint systems; and placement and configuration of displays, mirrors and controls.
- Headlamp design improvements that enhance nighttime visibility and reduce glare.
- High-contrast legible fonts and symbols for in-vehicle displays, to help compensate for age-related changes in vision.[1]
- More prominent analog gauges that are easier to see and interpret than small digital devices.[2]
- Continued use of computers which have revolutionized the motor vehicle industry by managing airbag safety systems, antilock brakes, and navigation systems.
- In-vehicle tools to assess for high-risk conditions that are entering the marketplace (such as a driver monitoring system that can monitor a driver's gaze position and eyelid closure ratio to assess for distraction and fatigue and can provide a warning).
- Vehicle designs that offer enhanced crash protection and restraint systems designed for fragile occupants that may enhance the safety of older adult drivers and passengers in the event of a crash.
- Add-on features that may also make current vehicle designs safer and more accessible for older adult drivers. For example, handholds and supports on door frames may facilitate entry/exit for both drivers and passengers. Padded steering wheels and seat adjuster handles (rather than knobs) may benefit drivers with decreased hand grip, and adjustable steering wheels and foot pedals may aid drivers with limited range of motion or who are of smaller stature.[3]

Crashes involving older adult drivers and fatality rates have fallen in recent years, despite the increased fragility of older adults. It may be possible to enhance these gains by better understanding the factors that enter into older drivers' vehicle selection and incorporating the issues outlined above into this process.[4] An effort to promote the selection of vehicles that may be a better fit for older adults is in place at the American Automobile Association website.[5] Other adjustable controls and displays may allow older drivers to tailor their vehicle to their changing abilities and needs. Safety features that may benefit older adults include smart headlights, emergency response systems, reverse monitoring, blind spot/lane departure warning, stability control, assisted parking, voice-activated controls, crash mitigation systems, and drowsy driver alerts.[6] Electronic stability control is now standard equipment on all new vehicles and may lead to further safety gains as it becomes more prevalent in the vehicle fleet.[7]

Vehicle technology is advancing and being implemented at a rapid pace. Fully automated vehicles have captured media and public

attention, as well as scrutiny of their safety and liability concerns. In spite of this, many individual technologies are becoming available on existing vehicles.[8] Although these may not often consider age or functional limitations in their development, they will be used by drivers with a range of capabilities, who have varying needs, expectations of, and preferences for such technologies.[9,10] Thus, there may be concerns about weighing benefits versus risks of these technologies for older drivers. Several recent studies have demonstrated potential benefits of some technologies, highlighting the importance of older persons' knowledge of, and training in, the appropriate use of these technologies.[11-13]

IMPROVED CLINICIAN TOOLS FOR ASSESSMENT OF DRIVING SAFETY

Clinicians need an assessment approach that reliably identifies older adult drivers at increased risk of a car crash. A tiered assessment strategy can be considered for clinical settings in which older adult drivers are screened routinely (on the basis of certain risk criteria) or if concerns about their driving arise (a similar strategy for licensing agencies is discussed below). Depending on screening results, the driver would be scheduled for more detailed assessment or an on-road driving evaluation. Fully implementing such a strategy in different clinical settings would involve logistical challenges. The ideal tests would assess the primary functions related to driving and form the basis for interventions to correct or ameliorate any identified conditions or functional deficits. In addition, this tool should be brief, inexpensive, easy to administer, and validated to predict crash risk and/or ability to pass a performance-based, standardized, reliable and valid road test.

At present, no one comprehensive tool is available, in part because of the multifactorial nature of driving ability and because of the limitations of potential measures. Global cognitive measures are easy to administer and score but do not adequately address the complex abilities necessary for safe driving. The limited ability of global cognitive measures to predict adverse driving events has increasingly led to a focus on other measures that address relevant cognitive domains such as executive function, attention, information processing speed, or visuospatial ability. Again, no single measure has stood out, in part because of the multifactorial nature of driving risk and because studies involve heterogeneous groups of drivers who may have very different risk factors. One approach is to narrow testing to individuals with a specific disorder or particular disease (e.g., glaucoma, dementia); however, this will obviously not be broadly applicable. Another approach is to look at combinations of tests that capture common risk factors.[14] A recent study demonstrated one analytic approach for combining tests to optimize predictive ability.[15] As several large longitudinal studies (e.g., Candrive, LongRoad) continue, their findings may continue to advance our understanding of these issues in the near future.

Clinical teams desire a quick, cost-effective, widely available comprehensive tool to determine driving recommendations. Until such a tool is available, given the multiple complexities of driving, the clinical team may be better served by tailoring assessment and intervention to the particular strengths and limitations of each older adult driver. Clinicians can evaluate older adults' potential driver risk by assessing functions related to driving (see Chapter 3) and reviewing the presence and/or severity of important medical conditions, functional deficits, and use of potentially driver-impairing medications (see Chapter 9). Given the projected increase in prevalence of dementia, clinicians should also try to ascertain caregiver concerns and

factor these into the assessment and intervention process.[16] Clinicians should discuss transportation planning early in the course of disease and revisit the topic frequently as the condition progresses.[17]

INCREASED AVAILABILITY AND AFFORDABILITY OF DRIVER REHABILITATION SERVICES

When the results of clinician assessment are unclear, or when further correction of functional deficits through clinical team management is not possible, DRS's are an excellent resource. DRS's can perform a focused clinical assessment, observe the older adult during the actual driving task, and train him or her in the use of adaptive techniques or devices to compensate for medical conditions or functional deficits (see Chapter 5).

Unfortunately, access remains a major barrier to use of DRS's by older drivers and referring clinicians. DRS's are not available in all communities, and there may be too few to provide services to all older drivers in need. Another common barrier is cost because driver assessment and rehabilitation are often not covered by Medicare and private insurance companies.

The American Occupational Therapy Association (AOTA) is addressing both issues through a number of initiatives. AOTA has devised a framework to increase the number of DRS's within the occupational therapy (OT) profession, including strategies to promote older driver expertise among current OT practitioners, curriculum content for continuing education programs, and training modules for entry-level OT educational programs. AOTA also continues to actively lobby for consistent Medicare and insurance coverage of OT-performed driver assessment and rehabilitation, under the premise that these services fall within the scope of OT practice and that driving is an instrumental activity of daily living.

A new model for occupational therapy generalists, OT-DRIVE, has been developed to help assess underlying functional abilities and determine when to refer to DRS's.[18] Other initiatives are addressing when to incorporate non-OT driving evaluators.[19]

In the effort to keep older adult drivers on the road safely as long as is reasonable, increased access to and affordability of driver assessment and rehabilitation are essential. Clinicians need to be aware of DRS services and programs in their area and use these resources whenever possible. Further research in this field is encouraged to demonstrate the efficacy and cost-effectiveness of DRS services, and to create standardized off-road and on-road driving tests that have respectable levels of reliability, validity, and test stability. Correlating results of on-road tests with prospective at-fault crash data remains an important area of future study.

INCREASED INVESTIGATION INTO USE OF SIMULATORS AND COMPREHENSIVE ASSESSMENT METHODS AND TECHNIQUES

Validated driver assessment technologies may help make driver assessment more widely available to older drivers. Simulated driving assessments offer a number of potential advantages compared with on-road testing, including standardization of the driving environment and scenarios encountered during testing, time efficiency, and safety for testing high-risk individuals. However, a number of challenges exist, including potential trade-offs between fidelity/realism versus cost/complexity of systems, tolerability and motion sickness in an older adult population, and complexity of scoring results. It remains to be seen whether simulator testing will remain an adjunct to the assessment process or can reliably substitute for on-road

evaluations, particularly in a population less familiar with simulator use. It will be useful to determine if familiarity with computers and electronic games by successive aging cohorts affects the outcome of simulator performance and/or reduces crashes. As interventions develop, it will be useful to determine the role of simulator training in relation to classroom and on-road training. Naturalistic driving assessment utilizing instrumented vehicles or technology placed in drivers' own vehicles may offer a closer approximation of real-world driving experiences as instrumentation technology and data analytic capabilities advance and become more accessible. A recent textbook reviewed the potential uses of driving simulation.[20]

Efforts should continue to better understand the complex role the central nervous system plays in operating a motor vehicle.[21,22] As new diagnostic tools are developed to better delineate different disorders, it will be helpful to determine the role these can play in determining driver risk. State licensing agencies and driver rehabilitation programs are encouraged to investigate the use of simulation and naturalistic driving to increase availability of reliable driver assessment services to the public. Such approaches, if integrated into or aligned with current practices, could help form an intermediate step between clinician assessment and driver rehabilitation or increase the licensing agency's capacity to offer specialized driver assessment to at-risk drivers.

ENHANCED ROLE OF THE STATE LICENSING AGENCY IN PROMOTING SAFETY OF OLDER DRIVERS

As the agency that ultimately issues, renews, restricts, and revokes driver licenses, each state's driver licensing agency has the task of distinguishing unsafe drivers from safe drivers. Although each state has its own procedures, potentially unsafe drivers are usually identified by one of four means: failure of the individual to meet licensing or license renewal criteria; report from the individual or family; report from clinicians, DRS's, law enforcement officers, and others; and 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 at-risk drivers by stipulating special renewal procedures based on different criteria. These procedures include shortened renewal intervals, in-person renewal, and mandatory reassessment of knowledge, vision, or driving skills.

Numerous studies have examined safety confounders for older adult drivers and hypothesized about the most beneficial approach. A review of studies in this area summarized the evidence as suggesting that in-person renewal was associated with lower fatal crash risk, license restrictions were associated with decreased exposure, and more renewal requirements or medical reporting were linked with delicensure.[23] Whether the latter findings are viewed as a positive outcome depends on individual perspective. If those targeted for restriction or more intense renewal requirements are truly at increased safety risk, then public safety may benefit. If not, those individuals' mobility may be adversely affected without clear gains in public safety.

This area warrants further investigation. States are encouraged to maintain or adopt renewal procedures for the most effective identification of at-risk drivers (see also Enhanced Role of the

Medical Advisory Board, below). States are also encouraged to base their standards for licensing on current scientific data. For example, visual acuity standards based on outdated research may be unnecessarily restrictive to all drivers and to older adult drivers in particular. In addition to the vision screens currently in use, driver licensing agencies may also wish to use newer tools (e.g., contrast sensitivity and the useful field-of-view test) that have been shown to correlate with crash risk.[24,25] Some of these tools, along with other tests of function and driving skills, have been field tested by the California Department of Motor Vehicles as part of its three-tier assessment system. Although this approach has many conceptual advantages, as tested there were limitations in its effectiveness.[26,27] Many lessons can be learned from this large- scale, practical experiment, and all jurisdictions would benefit from a better understanding of what worked well, what did not, and how to improve on the approach and implementation. In Maryland, a tiered approach is used to identify and assess medical fitness to drive in clients for whom decline in cognitive function is raised in materials submitted to the licensing agency. Most of the drivers in the cohort are older adult drivers. A free, five-element screening test is routinely used to assess these individuals.[28,29]

Driver licensing agencies could also create a more supportive system for older drivers. For example, the agency can work more closely with the at-risk driver's clinical team or the medical advisory board to correct functional deficits through 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 older adult's driving needs by issuing restricted (e.g., geographic or time of day) licenses whenever possible to help the driver maintain driving ability while protecting his or her safety. For older adult drivers who must relinquish their license, the agency can provide guidance in seeking alternative transportation and linkages to other agencies that might be helpful in identifying available resources.

At-risk drivers can also be brought to the attention of the driver licensing agency by clinician referral. However, many clinicians are not aware of their state's referral procedures, and others fear legal liability for breach of confidentiality.[30] With the advent of the Health Insurance Portability and Accountability Act (HIPAA), clinicians may have questions about the extent and detail of patient information they should or can provide in a referral. Driver licensing agencies can encourage clinician referral by establishing clear guidelines and simple procedures for referral (e.g., comprehensive referral forms that can be accessed online) and promoting clinician awareness of these guidelines and referral procedures. A 2012 review critiqued the forms used by 52 jurisdictions in North America and made a number of recommendations on best practices.[31] In many states, clinicians who refer older adults 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 clinicians to report impaired drivers without specifically offering this legal protection. Most statutes that provide immunity for reporting in good faith apply to physicians only.

Clinicians should join advocacy groups in their states to pass fair laws that protect clinicians who report in good faith and that ensure anonymity for reporting. Statutes providing immunity should include all members of the clinical team who are involved in the care and evaluation of drivers for whom there are concerns about medical fitness to drive (e.g., physicians, nurse practitioners, physician assistants, DRS's, social workers, pharmacists,

occupational therapists, nurses, psychologists, etc.). State legislatures are encouraged to establish or maintain good-faith reporting laws that provide immunity from breach of confidentiality lawsuits for clinicians and others who report potentially impaired drivers to their state licensing authority.

The state licensing agency should be involved in outreach education to clinicians, law enforcement, drivers, and their caregivers to improve awareness of their obligations regarding the reporting of medical conditions to the agency, which could promote earlier interventions. A website with easily accessible information and resources is essential. Ideally, the medical review unit staff and/or members of the medical advisory board should be available for outreach efforts and should partner with appropriate agencies and groups (e.g., departments on aging, health care professional societies, etc.) to facilitate outreach education.

Future older adult drivers will present with increasingly complex driving ability questions. For instance, palliative care providers may be confronted with an older adult's determination to continue driving past the time of medical fitness to drive. Such cases will challenge medical understanding, ethics, and legal counsel.[32] Health care teams and licensing agencies should anticipate preparing for diverse driving capacity scenarios in the years to come.

ENHANCED ROLE OF THE MEDICAL ADVISORY BOARD

A medical advisory board (MAB) is generally composed of state-licensed clinicians 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 licensing agency staff for use in developing policies that affect medically and functionally impaired drivers.[33] Many states lack an MAB or have one that is suboptimally used.

Each state driver licensing agency is encouraged to enhance the role of its MAB to provide improved capacity for assessment, rehabilitation, and support to older adult drivers. States that lack MABs are also encouraged to create a multidisciplinary 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 implemented in an efficient review process.

The National Highway and Traffic Safety Administration and the American Association of Motor Vehicle Administrators completed a study of each state's MAB practices.[34] This project detailed the function of each state's MAB, its regulatory guidelines, and barriers to implementation of screening, counseling, and referral activities. The executive summary of this study had many important recommendations for states that license medically impaired drivers, including:

- 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.
- Clinicians should be granted immunity for reporting.
- National standards and forms, and referrals for mobility counseling and/or DRS's, should be considered.

INCREASED PUBLIC AWARENESS OF MEDICATION ADVERSE EFFECTS THAT MAY IMPAIR DRIVING

Many prescription and over-the-counter medications have the potential to impair driver performance. Despite warnings on the label and counseling by clinicians, many older adults and their caregivers are unaware of these risks.

To address this problem, the National Transportation Safety Board (NTSB) recommended 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 ability to operate a vehicle. This recommendation was the focus of an FDA/NTSB joint public meeting held in November 2001.[35] This meeting hosted presentations of epidemiologic and controlled data on the effects of sedating drugs and crash risk, as well as presentations from innovators of devices 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 clinicians on adverse effects of potentially driver-impairing medications. Efforts to increase older adult driver, caregiver, and clinician education and to clarify labeling for consumers are encouraged.

Currently, manufacturers of medications do not routinely test their products for effects on driving, and they are not required to do so. The identification and routine use of effective testing parameters to identify medications that may interfere with the ability to drive safely is encouraged. Similarly, such parameters could be used to identify medications that do not typically impair drivers when used as directed.

PROMOTION OF SELF-AWARENESS AND APPROPRIATE SELF-REGULATION

Generally, older adult drivers modify their driving routine by self-regulation. Some drivers participate in educational programs or occupational therapy interventions in an effort to decrease crash risk by increasing their awareness of questionable driving habits and learning adaptive strategies. Occupational therapy interventions assist older adult drivers to develop objectivity in themselves and their driving environment.[36] In late life, both women and men compensate for individual changes in their health and capacity to drive, but a recent study found that older women were somewhat more likely than older men to stop or limit driving over time and that the factors associated with these changes differed by gender.[37] Another recent study, using naturalistic driving data, found that older women accounted for many of the age and sex differences noted in driving frequency compared with younger and middle-age drivers.[38]

OPTIMAL ENVIRONMENTS FOR OLDER ADULT DRIVERS AND PEDESTRIANS

To promote aging in place, clinical teams are encouraged to be realistic regarding environmental features essential for older adults. A recent review noted that older adults prioritized safety considerations when making mobility choices. Additional desirable elements included aesthetics (clean surroundings), land use (commercial/residential availability), format of street networks, and the older adult's cognitive and physical abilities to utilize these characteristics of their environment.[39] Many older adult drivers 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 major problem. Other commonly identified problems included traffic congestion, crime, and fast traffic.[40]

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.[41] In terms of road and traffic engineering, the Federal Highway Administration has recognized and addressed the needs of older adult drivers in its Handbook for *Designing Roadways for the Aging Population*, a supplement to existing standards and guidelines in the areas of highway geometry, operations, and traffic control devices.[42] 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. The Federal Highway Administration handbook is updated periodically to incorporate the latest research on the effectiveness of design and engineering enhancement to accommodate older adult drivers.

BETTER ALTERNATIVES TO DRIVING

Alternatives to driving are often less than ideal or nonexistent. When faced with the choice of unsafe driving or losing mobility, older adults may risk their own safety and that of other road users by continuing to drive.

A systematic review and meta-analysis confirmed the potential negative effects of driving cessation.[43] One study demonstrated that out-of-home mobility, as defined by the Life Space Diameter, decreased gradually over time with age, but substantially with driving cessation.[44] Curl and colleagues found that cessation had negative effects not only on the former driver, but also on their spouses.[45] On the positive side, Rapoport reviewed the literature on cessation interventions and found that while there are relatively few studies, with varying methodology, they did show a benefit.46 While access to and ability to use technology can be a limiting factor, several studies have shown that programs that provide technology access and training can be beneficial.[47,48] Ryerson described an ongoing collaboration of the AARP Foundation and several organizations to determine if access to and assistance with a ride hailing service will benefit health.[49]

Existing forms of transportation clearly need to be optimized for use by older adults. 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% of survey participants, with many citing unavailable destinations, problems with accessibility, and fear of crime as barriers to use. Fewer than 5% used taxis as their usual mode of transportation because of the high cost.[40] Until such barriers are addressed, these forms of transportation will remain suboptimal for many older adults.

Transportation programs created specifically for the older population, such as senior shuttles and vans, exist in certain communities. A number of locations have adopted the independent transportation network model.[50] These programs address the Five A's of Senior-Friendly Transportation: availability, accessibility, acceptability, affordability, and adaptability (see below).[51] As the older population continues to grow in numbers, the creation of

new programs or expansion of existing ones is encouraged to keep pace with passengers' needs, as well as stronger community outreach to increase awareness of such programs.

The Five A's of Senior-Friendly Transportation*

- 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).

* Source: *Supplemental Transportation Programs for Seniors,* The Beverly Foundation

The occupational therapy discipline has been at the forefront of driving and community mobility issues. This work reminds the clinical team to maintain a client-centered approach when counseling older adult drivers and to avoid the one-size-fits-all perspective. Most clinical team members and especially occupational therapists agree that often no single element of physical and cognitive capacity is sufficient to require driving cessation, but rather a multidimensional approach is necessary.[52] The number of different fitness-to-drive assessment tools and simulator evaluation techniques reflect the heterogeneity of the older adults these strategies are designed to assess.

To address these issues, the roles and responsibilities of all parties involved in the process need to be better defined, delineated, and disseminated. Drivers, caregivers, clinicians, DRS's, other health professionals, licensing authorities, and other community/state/national agencies and organizations have a role to play. Society as a whole needs to be involved in a discussion of acceptable thresholds of risk. In the process of identifying drivers potentially at increased risk of driving safety difficulties, a fair and appropriate assessment of risk is needed, identifying factors potentially influencing risk, considering interventions to lower risk, and identifying ways to facilitate the transition to driving limitations or cessation if drivers prefer to do so or if interventions are not possible or successful. More communication and coordination among the parties involved is needed, as well as demonstrating the effectiveness of different steps in the process, and more information on feasibility and sustainability. A holistic approach to the process is needed that considers not just driving but mobility in a broad sense.[53] An ideal system would also consider competing risks (e.g., falls, pedestrian safety) and interventions that might benefit these as well. A recent review highlighted progress in this area, as well as issues that still need to be addressed.[54]

Evidence emerging in the last 10–15 years has allowed a realistic consideration of expanding from a decision regarding driving versus not driving, or licensing versus revocation of licensing, to a discussion that includes interventions. Interventions have been developed that enhance relevant functional abilities, driver awareness of deficits, and clinician and caregiver awareness of how to address the issue, as well as that facilitate the transition to driving cessation.[55-64] Many of these studies have

been preliminary or small scale, and much more information is needed on how to broaden their applicability and to determine the ancillary effects.

Although these and other questions need to be answered, the good news is that much more preliminary information is available now than at any time in the past. Consequently, it is realistic to think holistically of a more comprehensive and integrated approach to driving safety and mobility that better balances individual autonomy, mobility, and safety with public health and safety. This holistic approach reflects many current national, state, and local efforts that more broadly consider the interrelationship and integration of transportation, health, housing, and environmental factors. Examples of such initiatives include the Interagency Partnership for Sustainable Communities by the Department of Transportation, the Environmental Protection Agency, and Housing and Urban Development. A number of other initiatives with similar or overlapping themes such as Aging in Place, Complete Streets, and Livable Communities have been advocated and investigated by AARP, the Centers for Disease Control, and the American Public Health Association, among others. Other initiatives, such as the Access and Mobility Partnership Grant Program (https://www.transit.dot.gov/funding/grants/grant-programs/access-and-mobility-partnership-grants) (formerly known as the Rides to Wellness Program), administered by the Federal Transit Administration of the U.S. Department of Transportation, directly address the link between transportation and health factors. Programs such as these are to be encouraged and studied, with the goal of enhancing and optimizing their effectiveness, efficiency, and sustainability.

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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®) 2018 Professional Edition*. Chicago, IL: American Medical Association; 2017.

When selecting the appropriate CPT® codes for driver assessment and counseling, first determine the primary reason for the patient's office visit, as usual. 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 applied.

Table 1 Evaluation and Management—Preventive Medicine Services

If the primary reason for the patient's visit falls under the E/M category of Preventive Medicine services, choose one of the following codes:

99386 **99387**	40–64 years old ≥65 years old	**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 laboratory/diagnostic procedures. These codes are used to report the Preventive Medicine E/M service for a new patient (or one who has not been seen in 3 or more years), which may include assessment and counseling on driver safety.
99396 **99397**	40–64 years old ≥65 years old	**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 laboratory/diagnostic procedures.

Note: Preventive Medicine service codes 99386-99387 and 99396-99397 can be reported only once per year. If an abnormality is encountered or a preexisting problem is addressed in the process of performing this Preventive Medicine E/M service, then the appropriate Office/Outpatient code 99201-99215 should also be reported. Modifier 25 should be added 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. See example below.

99401	Approximately 15 minutes	**Preventive Medicine, Individual Counseling** 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 use, 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 on 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 the patient can be included in the patient's chart as additional documentation. (A sample letter can be found in Chapter 6.)
99402	Approximately 30 minutes	
99403	Approximately 45 minutes	
99404	Approximately 60 minutes	

Table 2 Additional Codes

The codes below can be used for administration of CADReS (see Chapter 3). If you complete the entire assessment, you can include codes 95831, 96160, 96161 and either 99172 or 99173. The CADReS Score Sheet can serve as the report.

95831	Muscle testing, manual (separate procedure) with report; extremity (excluding hand) or trunk.
96160	Administration of a patient-focused health risk assessment instrument (eg, health hazard appraisal) with scoring and documentation, per standardized instrument.
96161	Administration of caregiver-focused health risk assessment instrument (eg, depression inventory) for the benefit of the patient, with scoring and documentation, per standardized instrument.
99172	Visual function screening, automated or semiautomated 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 test used must employ graduated visual acuity stimuli that allow a quantitative estimate of visual acuity (eg, Snellen chart).
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, longer than 10 minutes
99408	Alcohol and/or substance (other than tobacco) abuse structured screening (eg, AUDIT, DAST), and brief intervention (SBI) services; 15–30 minutes
99409	Alcohol and/or substance (other than tobacco) abuse structured screening (eg, AUDIT, DAST), and brief intervention (SBI) services; greater than 30 minutes

Example

Periodic comprehensive preventive medicine evaluation for an 82-year-old woman with hypertension, diet-controlled type 2 diabetes mellitus, and osteoarthritis. She is accompanied by her daughter, who requests an evaluation because of concern about her mother's driving safety.

During the appointment, the patient reports that she has had a cough and a low-grade fever over the last week.

In addition to performing the comprehensive preventive medicine examination, the physician performs a problem-focused history and examination to evaluate the cough and fever.

The following codes are applied:

99397	Established Patient, Periodic Comprehensive Preventive Medicine, ≥65 years old
99212-25	Office or other outpatient visit, with Modifier-25 indicating that a significant separately identifiable E/M service was provided by the same physician on the same day as the preventive medicine service

PATIENT/CAREGIVER EDUCATION

■ 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 clinicians 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.

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TIP SHEET

Safety Tips for Older Drivers

Many older adults can drive safely well into their 80s or even beyond. However, since various physical issues linked to aging can interfere with safe driving, it's important that older drivers—and the people who care for them—evaluate their needs to keep them safe while they're on the road.

These tips and resources can help older drivers take essential steps to maintain driving safety:

Seat belts save lives.	Buckle up before starting the car—every single time. If your seatbelt is uncomfortable, adjust the shoulder mount or buy a shoulder pad that slips over the belt.
Mute your cell phone.	Talking or texting while driving distracts you from the road and other vehicles. Leave your cell phone on silent, and do not answer it while you're driving.
Do not eat while driving.	Eating can also distract you while driving. If you must eat or drink, pull into a safe area such as a parking lot and finish all refreshments before getting back on the road.
Do not drink and drive.	As people age, their ability to process alcohol may change. Even one cocktail or a glass of wine or beer may make older drivers unsafe on the road, especially when mixed with different medications.
Limit distractions.	Listening to music or audio books or even chatting with passengers can distract some older drivers. If you're among them, turn off the sound and avoid having conversations with others in the car.
Watch the road.	Make sure there is always enough space between your car and the vehicles in front of you. Also, maintain a safe distance from traffic behind you.

Drive during daylight as much as possible.	Older adults, even those with good vision, can experience visual problems at night. General darkness and glare from oncoming headlights makes it more difficult to see.
Avoid driving in bad weather.	Rain, snow, fog and other hazardous conditions can be especially dangerous for older drivers. Let the bad weather clear before you get on the road. If you must travel, use public transportation or a car service.
Choose safer routes.	Try to avoid highways that have ramps, which can be dangerous for older drivers. Also making left turns on highways or busy roads. It's better to go a little out of your way to avoid difficult intersections and turns.
Try to drive when there's less traffic.	Peak rush hour traffic can be stressful for all drivers, but particularly for older drivers. Try to limit driving to those times when traffic is lighter.
Stressed or tired?	Stay where you are until you're well rested and calm. Driving when you're not at your best can be dangerous.
Know your medications.	Some medications can make you feel drowsy and less alert than usual, or can affect reaction time and other attention issues. Some prescriptions may warn against driving while taking the medication. Review your medications with your primary care provider or a pharmacist to see if your medication(s) could lead to unsafe driving.
Consult a driving rehabilitation specialist.	These professionals are trained to evaluate older drivers for the following issues: * Muscle strength, flexibility, and range of motion * Coordination and reaction time * Judgment and decision-making skills * Ability to drive with specialized, adaptive devices After the evaluation, the specialist may recommend ways for you to drive more safely. Suggestions may include special equipment or training. You can find a specialist here: http://www.aded.net/.

Investigate the CarFit program

CarFit is an educational program sponsored by the American Automobile Association (AAA), AARP Driver Safety, and American Occupational Therapy Association. At a CarFit event, health professionals and experts who specialize in helping older drivers will work with you to make sure your car is properly adjusted for your safety. A CarFit exam takes about 20 minutes to complete. Find a CarFit program near you here: https://car-fit.org.

New vehicle technologies

Recently, the American Automobile Association (AAA) and the University of Michigan Transportation Research Institute (UMTRI) looked at 16 new vehicle technologies. They found that these six features helped to reduce crashes and make driving less stressful for older adults.

- Forward collision warning

  These systems, which are available in many newer cars, can warn you if you're about to have a crash. When a potential collision is detected, the car automatically applies the brakes. The AAA/UMTRI study suggested that this technology might improve reaction times and reduce crashes by up to 20%.

- Automatic crash notification

  Some cars are equipped with communication technology. In case of a crash -- typically one that triggers airbags to go off --the car signals emergency services that you've been involved in a crash. Emergency services can be notified about the crash without anyone having to call 911.

- Parking assist with rear-view display

  Back-up cameras allow drivers to clearly see what's behind them as they back up. This makes parking easier. Some cars are also equipped with an obstacle-detection warning system, which will notify you if you're about to hit something.

- Self-parking systems

  Some cars have technology that takes over steering while the car parallel parks itself.

- Navigation assistance

  According to the study, turn-by-turn GPS systems make older drivers feel safer, more confident, and more relaxed while driving. However, some of these systems may be distracting and difficult to use. Make sure to choose one that is easy for you to use.

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Testing Driver Safety

When it comes to driving, there is no set age when people become less safe behind the wheel. Safety depends on both physical and mental health, which vary widely from person to person. However, the following items can be considered as warning signs and suggest that you should get tested for your ability to drive safely:

- Getting lost in familiar areas
- Ignoring traffic signs and signals
- Becoming easily agitated or angered when driving
- Falling asleep or being unable to concentrate when driving
- Reacting too slowly to dangerous situations
- Forgetting or ignoring driving basics – when to yield right of way, for example
- Having trouble judging distances

Several tests and reviews can help determine how safe a driver an older adult may be.

If you feel that you are having difficulty driving safely, consider taking these actions:

Start with a good physical.

Have your primary care healthcare provider examine you for changes that may affect your driving, including your fitness level.

Have your vision checked.

An optometrist or an ophthalmologist can evaluate your vision for problems that may reduce your ability to drive safely.

Get a driving evaluation.

An occupational therapist trained as a driving rehabilitation specialist can evaluate your driving to see how safe you are when driving, or if you could benefit from having your skills rehabilitated. Occupational therapists can thoroughly review your general skills and note areas that need improvement.

Consider cognitive testing.

If you're concerned that you may be having memory problems, dementia, or other problems that affect your ability to think and make decisions, talk to your primary care provider. The provider can do some simple tests to assess your mental skills and determine whether you have the mental ability to drive safely.

Check your state's rules.

Many states have laws that require testing or other requirements for older drivers. Also, check your driver's license to see when it's time for renewal. Learn more about specific state requirements here: https://www.ghsa.org/state-laws/issues/mature%20drivers

Know your medications.

Some medications can make you feel drowsy and less alert than usual, or can affect reaction time and other attention issues. Some prescriptions may warn against driving while taking the medication. Review your medications with your primary care provider or a pharmacist to see if your medication(s) could lead to unsafe driving.

Resources

Vision testing for older adults
https://www.aoa.org/patients-and-public/good-vision-throughout-life/adult-vision-19-to-40-years-of-age/adult-vision-over-60-years-of-age?sso=y

Eye care for older adults
https://www.aao.org/eye-care-for-older-adults

Safety: Older adult drivers
https://www.cdc.gov/motorvehiclesafety/older_adult_drivers/

Evaluations for older drivers
https://www.aota.org/about-occupational-therapy/professionals/rdp/articles/older-drivers.aspx

Dementia and driving
https://www.alz.org/help-support/caregiving/safety/dementia-driving

Self-Assessment test for older drivers
https://seniordriving.aaa.com/evaluate-your-driving-ability/

Organizations that provide testing and instruction for older drivers
https://one.nhtsa.gov/people/injury/olddrive/Driving%20Safely%20Aging%20Web/page8.html

Fitness-to-Drive Screening Measure Online
http://fitnesstodrive.phhp.ufl.edu/us/

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TIP SHEET

Becoming a Non-Driver? Find Alternate Transportation Options.

You've been concerned about the safety of an older adult because they are still driving and probably shouldn't be. Or, you might be worried about your own safety on the road, because you've realized that your skills are no longer as sharp as they need to be to meet the demands of driving.

Driving often represents independence for older adults. Plus, getting to social events, medical appointments, stores, recreational activities, etc, is important for healthy living as you age.

In fact, when older adults stop driving, their health can worsen. According to a recent study published in the Journal of the American Geriatrics Society, giving up the keys nearly doubles the symptoms of depression for older adults, and it may also increase declines in physical and mental health.

So when older adults stop driving, it's crucial to maintain their independence by creating alternative transportation solutions.

Make a Plan

To do so, make a transportation plan. That means sitting down with the older adult and determining where he or she drives on a regular or even occasional basis. Write down the specifics of each trip, including the general time of day, the length of drive and stay, and any other details.

Research Travel Options

Then, research the travel options available in your area, and select those that match the older adult's specific needs for each trip. You might even want to list them on your transportation plan.

For example, if an older adult attends a weekly faith-based gathering, think of different ways he or she could get there. Maybe people from the faith community could provide rides on a rotating basis. The key is to make sure the older adult can continue to enjoy his or her usual activities by having transportation options covered.

Transportation options will vary depending on your community. These may include:

Volunteer programs.

Some faith-based and community non-profit organizations often have volunteers who will drive older adults to various places. Each organization offers different options. Rides are either free, on a donation basis, or through membership dues.

Paratransit services.

These include mini-buses and small vans run by public transportation, aging organizations, and private agencies. These services may require you to make reservations in advance but you often have scheduling options and flexibility. Generally, the transportation provided is curb-to-curb, meaning you meet the vehicle at the curb or roadside and get dropped off at a curb or roadside stop. Some services will pick you up at your door and deliver you right to a specific address. Reduced fares may be offered to senior citizens.

Door-through-door services.

Some agencies provide drivers or escorts who will help you get from your home into a waiting vehicle. This service is particularly helpful to older adults who are disabled or need support while walking. Your local aging organization will help see if this is available in your neighborhood.

Public transportation.

Buses, trains and subways, trolleys, and other mass transit options have established routes and times. They may offer reduced fares for older adults and may be accessible for people with disabilities. Your local public transportation department can provide information about fares, schedules, and accessibility.

Taxi services.

Car services can be accessed several different ways. In some cities, you can simply hail a cab on the street. (Make sure you can hail a cab on the other end of the trip as well.) You might also be able to call ahead for a cab, or access rides from transportation network companies (eg, Uber or Lyft). These companies often require downloading an app onto a mobile device such as a cell phone and may only be available in larger population areas. They also may require pre-registering and often providing credit card information.

It's a good idea to do some research ahead of time to find out the following information about any car services you might use:

- ☐ How much do rides cost?
- ☐ What method is used to charge for rides? Is it calculated by mileage or by time?
- ☐ How far in advance you need to make a reservation?
- ☐ Are the vehicles accessible if you use a wheelchair or walker?
- ☐ Will drivers help you in or out of the car if you need assistance or have packages?
- ☐ What areas do the cars serve? Is there a maximum distance a driver will take you?
- ☐ Are drivers properly licensed, insured, and checked by appropriate agencies?
- ☐ Do drivers use their own vehicles? If so, are they properly inspected, registered and insured? Do they have safety belts and other safety features?

Depending on the older adult's needs, these services may also be helpful:

Travel training.

Some public transportation departments and local organizations that support older adults provide free training classes to help both older adults and people with disabilities access and use local public transit safely and independently. These services help individuals find the best routes to take to reach their destinations, the cost of the trip, and methods of payment (exact change, travel cards, tokens, discounts, vouchers, etc).

Many agencies also provide one-on-one demonstrations about how to ride local public busses and trains.

Mobility managers.

In some communities, mobility managers can help guide you through the various local transportation options. They understand the local transportation network and can explain how it works. Your local aging organization or public transit agency may be able to connect you to a mobility manager.

Transportation voucher programs.

Area Agencies on Aging, Aging and Disability Resource Centers, and other social service organizations may offer financial help with transit fares if you qualify (usually for lower-income older adults or people with disabilities). You have to apply for these programs, and you are still responsible for reserving and accessing the transportation service you need.

Resources

800.677.1116 **Elder Care Locator**

https://eldercare.acl.gov/Public/Index.aspx

National Association of Area Agencies on Aging

https://www.n4a.org

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Top Tips for Discussing When it's Time to Stop Driving

As someone you care for ages, you may become worried about his or her ability to continue to drive safely. Some people can drive competently well into their 80s and even beyond, while other people may have difficulties in their 60s or even younger.

When you're responsible for an older adult's overall safety, you may wonder when it's appropriate to start talking about safety behind the wheel.

Your first step in this process is to observe the older adult while driving.

The following situations can indicate possible driving problems:

- Getting lost, even when driving short, familiar routes
- Failing to obey traffic signs or signals
- Cutting off other drivers, straddling lanes, or making wide turns
- Reacting slowly to emergencies
- Falling asleep behind the wheel or appearing inattentive
- Becoming easily angered or agitated
- Using poor judgment, such as not yielding right-of-way
- Forgetting to use mirrors or turn signals or to check for blind spots
- Having trouble judging distances

It's important not to comment on or to criticize the older driver's behavior during the drive. Instead, have a chat about any issues after you're both out of the car. Calmly state any unsafe actions, without sounding judgmental or angry. Be sure to be specific.

If you see that the older driver had problems like the ones mentioned above, consider these steps:

Schedule a check-up.

A healthcare professional can evaluate whether the older adult is physically able to drive safely. The provider can also advise you if any medications the older adult is taking could affect his or her ability to drive safely.

Get a vision test.

An eye care professional, such as an optometrist or an ophthalmologist, should test the older driver's vision to make sure they are visually able to drive safely.

Have a professional evaluate the older adult's driving skills.	There are professionals who specialize in evaluating whether older adults can drive safely. A driving rehabilitation specialist (DRS) is a professional who has the skills to evaluate an individual's overall ability to operate a vehicle safely. Based on the individual's performance the DRS will develop a plan, make recommendations about strategies, equipment, and provide training to improve a person's driving safety and overall health and well-being. However, there are not many DRS's in the United States. If you do not have access to a DRS in your area, an occupational therapist may also be able to evaluate many driving-related limitations. The American Occupational Therapy Association (AOTA) and ADED: The Association for Driver Rehabilitation Specialists are organizations that can assist you in finding a professional.
Know when to have the conversation.	Ask yourself: Do you feel comfortable letting the older adult drive you somewhere? The answer may be a signal that it is time to start the conversation.
Enlist support.	Talk to others in the older driver's circle. Ask them if they share your concerns about the older adult's ability to drive safely. Rehearse the discussion with them so you can be calm and caring. Depending on the circumstances, you may even ask one or more of them to participate in the driving conversation with the older adult.
Make the conversation compassionate.	You don't want the older adult to feel like "everyone is ganging up on them," so make certain to frame the conversation in a supportive, concerned way. Don't let your own anxiety or fear about addressing driving skills lead you to sound angry.
Discuss specifics, but avoid blame.	Explain to the older adult why you're worried about his or her driving. Cite examples: "Dad, you went through a stop sign last time we drove together. And you forgot to use your turn signals." Or, "Mom, you got lost on the way to the supermarket."
Be prepared for resistance and even anger.	Driving represents independence to many older adults. When they think you might be taking away their ability to get around, they may become defensive, even irate.
Schedule time for another talk.	If the older adult resists what you're saying or gets agitated, gently end the conversation. Let them take in what you've said, then revisit the topic a day or two later.
Ask for the older adult's opinion.	Make sure to take the time to hear what the older person thinks about his or her driving ability and honest feeling of security behind the wheel. It's very possible that if you've noticed problems, he or she may have, too, and may feel vulnerable.
Appeal to the older driver's sense of responsibility.	If the medical professionals and the driving specialist you consulted agree that it's time for the older adult to stop driving, appeal to his or her sense of responsibility. Remind the older driver that driving poses a risk not only to self but also to others, who could potentially be injured – or worse – in case of a crash. Older drivers might want to think about how they would feel if they were to cause an injury.

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Alternative transportation and other resources

Driving is how many of us reach the services we need every day for activities such as health care, nutrition, social activities, financial services, and shopping. There are many resources which can be used to help access these activities and services when driving or other means of transportation are limited. The following list may be useful for finding alternative transportations and locating other resources as well in your area.

General Aging Resources

Eldercare Locator

https://eldercare.acl.gov/

800-677-1116 weekdays

The Eldercare Locator is a public service of the U.S. Administration on Aging that connects older adults and their caregivers to local services.

National Association of Area Agencies on Aging

www.n4a.org/

Assists in finding resources for older adults in the local community.

Aging Life Care Association

http://www.aginglifecare.org/

520-881-8008

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 website above to find a local geriatric care manager.

National Association of Social Workers (NASW)

http://www.helpstartshere.org

A social worker can provide counseling to an older adult, assess social and emotional needs, and assist in locating and coordinating transportation and community services. To find a local qualified clinical social worker, use the Find a Social Worker option on the Help Starts Here website.

Alternative Transportation Options

American Public Transportation Association (APTA)

http://www.apta.com/resources/links/

Find a local transportation provider in your state.

Easter Seals

http://es.easterseals.com/site/DocServer/Transportation_Solutions.pdf?docID=2081

Transportation Solutions for Caregivers

National Aging and Disability Transportation Center

https://www.nadtc.org/

Information on transportation options for older adults.

Coordinating Council on Access and Mobility

https://www.transit.dot.gov/ccam

A partnership of federal agencies working to improve the availability, quality, and efficient delivery of transportation services to people with disabilities, older adults, and people with low incomes.

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Drivers 65 Plus: Check Your Performance

A Self-Rating Tool with Facts and Suggestions for Safe Driving

AAA Foundation for Traffic Safety

As a mature driver, you bring a wealth of experience to the driver's seat.

By the year 2030, one of every five drivers in America will be 65 years of age or older. Freedom to travel by automobile will continue to be an important factor to maintain personal independence and mental health. The central idea of this booklet is to help you drive as long as safely possible.

Age should never be used as the sole indicator of driving ability. In fact, drivers 65 and older represent a wide range of abilities, and no individual should have his or her driving privileges determined solely on their age. However, it is not uncommon for some of the skills necessary for safe driving – vision, reflexes, flexibility, and hearing – to begin to deteriorate as we age.

If you notice that you are beginning to experience some of these natural age-related changes, you can adjust your driving habits to keep driving safely – after all, one of the most critical assets for safe driving is experience, and experience does *not* decline with age. It's important to recognize your limitations and to be aware of everything you can do to be safe on the road.

Drivers 65 Plus

Introduction

Think about what tasks you do every time you get behind the wheel of a car. You must coordinate the actions of your hands, feet, eyes, ears, and body movements. At the same time, you must decide how to react to what you see, hear, and feel in relation to other cars and drivers, traffic signs and signals, conditions of the highway, and the performance of your car.

These decisions are usually made close to other vehicles and must be converted quickly into action — brake, steer, accelerate, or a combination of these — to maintain or adjust your position in traffic. And these decisions must be made frequently.

As a mature driver, you bring a wealth of experience to the driver's seat; that is why, on average, drivers in their fifties and sixties have just about the lowest crash rates of anyone on the road. However, as some of the skills required for optimal driving performance begin to decline at older ages, research shows that crash rates begin to increase as drivers reach their late 60's or early 70's, and increase more rapidly after about age 75.

Additionally, your body is not as resistant to injury as it might have been 30 or 40 years ago. If you are involved in a crash, you are likely to suffer more serious injuries as compared to a younger person in a similar crash. This makes it increasingly important for you to do everything you can to keep your driving skills sharp and to minimize your chances of being involved in a crash in the first place.

Purpose of this Booklet.

This self-rating form is designed to help you examine your ability to keep driving safely. Through knowledge and self-awareness, you can make better informed decisions about when to get behind the wheel and when to seek other forms of transportation.

The rating form on the next page is for your private use.
Answer the 15 questions as honestly as possible. Use the rating guide to compute your score and to identify your strengths and weaknesses.
Next, read the *Suggestions for Improvement* section that corresponds to each question to see how you can improve your driving.

Now, please follow the instructions on pages 2 and 3.

Drivers 65 Plus: Self-Rating Form

INSTRUCTIONS: For each of the following 15 questions, check the symbol (✓) of the one answer that best describes you.

		Always or Almost Always	Some-times	Never or Almost Never
1.	I signal and check to the rear when I change lanes	○	□	□
2.	I wear a seat belt	○	□	□
3.	I try to stay informed on changes in driving and highway laws and techniques	○	△	□
4.	Intersections bother me because there is so much to watch from all directions	□	△	○
5.	I find it difficult to decide when to merge with traffic on a busy interstate highway	□	△	○
6.	I think I am slower than I used to be in reacting to dangerous driving situations	□	□	○
7.	When I am really upset, it affects my driving	□	□	○
8.	My thoughts wander when I drive	□	△	○
9.	Traffic situations make me angry	□	△	○
10.	I get regular eye exams to keep my vision at its sharpest	○	□	□
11.	I check with my doctor or pharmacist about how the medications I take affect my driving ability. (If you do not take any medication, skip this question)	○	□	□
12.	I try to stay informed of current information about health and wellness habits	○	△	□
13.	My children, other family members or friends have expressed concern about my driving ability	□	△	○

		None	One or Two	Three or More
	Note new headings:			
14.	How many traffic tickets, warnings, or "discussions" with law enforcement officers have you had in the past two years?	○	△	□
15.	How many collisions (major or minor) have you had during the past two years?	○	□	□

Self Scoring: Count the number of checkmarks in the squares and record the total in the square below. Follow the same procedure for the triangles and circles.

□ △ ○ **These are your Check Mark Totals. For score and interpretation, see next page.**

Scoring: There are 5 steps.

Step 1: Write the Check Mark Total recorded in the square on the previous page in the square to the right. □ X 5 = _____

Step 2: Write the Check Mark Total recorded in the triangle on the previous page in the triangle to the right. △ X 3 = _____

Step 3: Multiply the number in the square by 5.

Step 4: Multiply the number in the triangle by 3.

Step 5: Add the results of Steps 3 and 4. YOUR SCORE IS _____

Interpretation of Score:

The lower the score, the safer you are as a driver.

The higher the score, the more danger you are to yourself and others.

No matter what your score, look at the *Suggestions for Improvement* section for each area in which you checked a square or triangle. These are the areas in which you can improve the most.

Score	Meaning
0 to 15	**GO!** You are aware of what is important to safe driving and are practicing what you know. See the *Suggestions for Improvement* in the following section of this booklet, to learn how to become an even safer driver.
16 to 34	**CAUTION!** You are engaging in some practices that need improvement to ensure safety. Look to the *Suggestions for Improvement* section to see how you might enhance your driving.
35 and over	**STOP!** You are engaging in too many unsafe driving practices, and might pose a hazard to yourself and others. Examine the areas where you checked squares or triangles. Read the *Suggestions for Improvement* section for ways to correct these problem areas.

These scores are based on what drivers 65 and over have told us about driving practices and habits. Your score is based on your answers to a limited number of important questions. For a complete evaluation of your driving ability, many more questions would be required, along with medical, physical, and licensing examinations. Nevertheless, your answers and score give some indication of how well you are doing and how you can become a safer driver.

In general, a checked square for an item reflects an unsafe practice or situation that should be changed immediately. A checked triangle means a practice or situation that is unsafe, or on its way to becoming unsafe, if nothing is done to improve it. Checking circles is a sign that you are doing what you should to be (and remain) a safe driver.

Most of the square and triangle answers represent practices or situations that can be improved by most drivers. The following section contains suggestions for improvement, divided into each of the 15 areas. You should focus on those areas for which you checked squares or triangles.

Drivers 65 Plus: Suggestions for Improvement

1 I signal and check to the rear when I change lanes.

Checking rearview and side mirrors, looking to the rear to cover the blind spots, and signaling well before your maneuver are the only ways to avoid hitting a car when changing lanes.

But why don't you do these things all the time? In some cases, you might simply forget. In observational studies older drivers report being unaware of having failed to look to the rear before changing lanes or backing up. Many of our driving habits are exactly that – habits. And we can stop being aware of our actions, especially if we've driven crash-free for a long time.

Many older drivers stop looking over their shoulders because of decreased flexibility. If you have arthritis, then you know how painful a quick look over the shoulder can be.

If looking over your shoulder to check for traffic is difficult for you, try to:

• Drive with a partner to act as a co-pilot whenever possible.

• Install extra-wide rearview mirrors and side mirrors to decrease your blind spots. You'll need to learn how to use the side mirrors correctly, because those of convex lens design can make objects appear smaller and farther away than they actually are.

• Ask your physician about medications and exercises that might improve your flexibility; the AAA Foundation for Traffic Safety has a brochure available online at ***AAAFoundation.org*** called *A Flexibility Fitness Training Package for Improving Older Driver Performance* to help you improve your flexibility.

• Take a re-training or refresher course that helps older drivers adjust to the limitations due to aging. Call your local AAA club to see if they offer a course.

• Make a concerted effort to be aware of your driving habits and decide to always look before changing lanes.

2 I wear a seat belt.

Seat belts cut your risk of death nearly in half if you are involved in a serious crash, and of course, it's the law in nearly every state. Even if you plan to drive only short distances under ideal conditions, it makes sense to wear your seat belt every time you ride.

To provide optimal protection, seat belts should be worn properly with the shoulder belt across your shoulder and upper thigh bones, because serious injury can occur if not worn properly. Fastening your seat belts is unquestionably the single best way to protect yourself in a crash.

You can increase your chances of surviving a collision or reducing injury by taking the following steps:

• Wear your seat belt properly at all times.

• If your seat belt is extremely uncomfortable or cannot be properly fastened, take it to a competent mechanic for alterations. Many cars have adjustable shoulder belt mounts or you can buy devices that improve the fit.

• If your car does not have an automatic reminder to fasten seat belts, leave yourself a note on the dashboard or sun visor. Remind your passengers to buckle up.

Wear your seat belt correctly... across your shoulder and chest - NOT under an arm, across your hip bones - NOT your stomach. It's comfortable... it's easy.

***New York Coalition for Safety Belt Use Medical Society. State of New York**

3 I try to stay informed on changes in driving and highway laws and techniques.

With new roads being built, new traffic signals being installed, and intersections being converted into traffic circles or roundabouts in an increasing number of cities, it is critical for you to continually refresh your knowledge of the roads and traffic patterns near where you drive.

Knowledge of signs and symbols can help you, especially if your ability to see them is diminishing. Sometimes, just knowing what the shapes of signs mean can help you anticipate their message. Familiarity and knowing what to do can eliminate hesitation and uncertainty when you need to make a quick decision.

We all want to share the road safely, so we need to understand traffic laws, devices, signs, and symbols. Here's how you can learn more about them:

• Call, visit or go online to your state's motor vehicle administration to obtain the current drivers licensing manual for your state. Study the manual as though you were taking the test. Ask if they have other ways for you to stay current.

• Take a re-training or refresher course. Contact your local AAA club to find a course near you or visit ***AAASeniors.com.***

• Make a point of checking your local newspapers for changes in traffic patterns and special intersections or signage, so you feel prepared and confident.

4 Intersections bother me because there is so much to watch from all directions.

Intersections are dangerous for all of us. You must interact with other drivers and pedestrians whose movements and decisions are difficult to anticipate. In fact, crashes at intersections are quite common among older drivers, especially when left-turns are required.

How comfortable you feel around intersections can be an early warning sign that you need a refresher course or other assistance. Listen to your instincts and take a good look at your driving skills. What bothers you most about intersections? Is it an inability to handle all the information quickly enough? Are you unsure about how to position the car for a left or right turn? Do you find it difficult to turn the steering wheel because of arthritis or some other physical problem? Is it hard to judge the speed of oncoming vehicles? Sometimes, this sort of analysis can lead you to solutions.

If you find intersections difficult, review the following steps for improvement:

• If one or two intersections on your regular routes give you particular trouble, study them while on foot. Watch the problems other drivers have to handle. Notice how the traffic signals assist drivers and pedestrians. This way you know in advance what the common problems are and how to handle them when they occur. This kind of analysis can help you handle other intersections as well.

• Plan your trips to avoid busy intersections or use them at less congested times. Plan an alternate route to avoid left turns from busy intersections. Remember that making three right turns can help you avoid turning left. In many places you will be able to do this by driving straight through the intersection, turning ***right*** at the next street, and then making two more right turns. Then, you end up driving straight through the original intersection in the direction that you originally wanted to go.

• Take a re-training or refresher course that helps older drivers adjust to the limitations of age. What you learn may give you the confidence to recognize that you can handle intersections correctly.

5 I find it difficult to decide when to merge with traffic on a busy interstate highway.

Many drivers experience feelings of insecurity and nervousness about entering a busy interstate highway or any high-speed road. If you dislike the speed of traffic and the number of cars on interstates or have stopped using them entirely, then you will probably want to improve your skills so you can use them more confidently.

If you live where interstates are convenient to access and you travel them often, you probably have gained experience and feel confident about driving on them. However, if you drive them infrequently or not at all, you might be fearful of what you "don't know" about them. More cars, faster traffic, and increased congestion can make interstates intimidating to any driver.

Here are some suggestions for improving your skills on interstate highways:

- If you decide that you do not know enough about interstates to drive on them safely and that reluctance to enter them is in part because of a fear of the unknown, take a refresher course to learn how to use them properly.
- If you feel you have the ability to drive on interstates, but want to improve your skills, ask another experienced driver whose opinion you trust to ride with you and suggest what you should and should not do. Then, practice when traffic is less congested.
- If you feel so uncomfortable on interstates that you feel you may be in danger, try to avoid them. There is always another, parallel route. You are your own best judge of whether they are safe for you, regardless of how safe they may be for others.

6 I think I am slower than I used to be in reacting to dangerous driving situations.

Emergencies and dangerous situations may be relatively uncommon, but fast and safe reaction to them is essential. Most older drivers tend to have excellent judgment when driving. It is in reacting to emergencies that some older drivers most markedly demonstrate a slowing down.

Older drivers can have trouble integrating information from several sources at once, and therefore respond more slowly to dangerous situations.

Responding quickly to a traffic situation requires that several skills be sharp. First, you must see or hear the danger. Second, you have to recognize that the situation is dangerous and requires action. Third, you must decide how to act. And fourth, you must act appropriately. A slight slowing down in each of these skills can result in a much slower overall response time to traffic emergencies.

What can you do to improve your "emergency" skills?

- Take a re-training or refresher course that helps older drivers adjust to the limitations of age. There, you can learn and practice ways to improve your ability to more rapidly anticipate and avoid dangerous situations.
- Visit ***Roadwise Review Online*** at ***SeniorDrivers.org,*** to use a free screening tool developed to help seniors measure certain mental and physical abilities important to driving, see end of this booklet for more information. A next step would be to visit an occupational therapist and have your physical and mental driving skills evaluated. In many cases, practice exercises can improve your skills. Many hospitals offer out-patient counseling.
- Avoid driving in congested, fast-moving traffic, whenever possible.
- Keep yourself physically fit and mentally stimulated. Avoid driving if you are tired, ill, have been drinking, or have taken any other drug that slows your mental or physical responses.
- Exercise to maintain or increase your muscular strength and the flexibility of your joints. Always check with your doctor before starting a new exercise program.
- If your joint and muscle impairments are serious, ask your doctor about medical, physical, and surgical therapies. Anti-inflammatory drugs and various surgical procedures can lessen impairment sufficiently to permit safe driving.
- Consult an occupational therapist or driver rehab specialist to equip your car with devices that compensate for losses of flexibility and strength and learn how to use them. Make sure your next car has power steering, power brakes, automatic seat adjustment, and other features to help you control your car better. See the information on ***Smart Features for Mature Drivers*** and ***CarFit*** at the end of this booklet.

7 When I am really upset, it affects my driving.

It takes only a moment of inattention to produce a collision. As you age, experience and good judgment make you a better driver. However, if you were aggressive and hostile on the road when young, you are likely to be much the same today. The difference is that now, because of decreased driving skills, you may not have the ability to recover from those dangerous highway situations that arise out of aggression and hostility.

Take the following steps to minimize the impact of your emotions on driving safely:

- When you know that you are very emotional about something, delay driving until you have calmed down.
- Awareness is the first step toward controlling anger. The second step is handling it in a healthy manner, such as taking a walk several times around the block or more if necessary, or talking with a friend or a professional counselor. Getting behind the wheel in a highly emotional state, whether joy or anger, diverts attention from the task of driving and invites trouble.

8 My thoughts wander when I drive.

Driving is a complicated and demanding task, requiring continuous concentration and even momentary lapses can lead to danger. Anyone can be distracted momentarily by accident, but the number one focus of all drivers should always be the important task of driving.

Of course, you have probably seen drivers in animated conversations or talking on cell phones and noticed how it affected their driving – driving erratically or drifting from their lanes. Other drivers drink coffee, groom themselves, or try to glance at reading materials while driving. In an emergency, these inattentive drivers may not be able to return from their diversion in time to take evasive action.

One area in which you have total control is your decision to give driving your full attention. Give driving the attention it deserves and you will buy yourself valuable seconds of reaction time in an emergency.

There are several things you can do to keep your thoughts from wandering:

- Treat driving as a complicated task requiring your full attention.
- If you catch yourself daydreaming or otherwise failing to concentrate on your driving, identify what is distracting you and try to overcome it.
- Take the necessary steps to remove or reduce distractions, whether they are those over which you have control, such as turning off the radio, or those for which you will need help, such as dealing with emotional issues.
- As you drive, play the "What If" game to stay alert and mentally prepare for driving emergencies. Ask yourself what you would do if certain situations occurred.

9 Traffic situations make me angry.

Anger behind the wheel comes out in dangerous ways. Most people trapped in slow-moving traffic feel frustrated, and this frustration can lead to anger at the situation. However, some people direct their anger at other people, instead of the traffic situation itself. This can lead to inappropriate reactions, honking horns, yelling at other drivers, cutting others off in traffic, or blocking intersections.

When drivers become overly-emotional in reaction to a situation, it is a clear sign that other emotions are the true cause and driving has become an outlet for expressing anger.

Many emotions can turn into anger. Fear of other drivers who are driving recklessly, can bring on violent anger. Anxiety over being late and anger at other situations in one's life can also provoke unwarranted anger. All these emotions are counter-productive.

The worst part of anger is how drivers express it. If you find yourself driving erratically, driving too fast, or tailgating someone "to teach them a lesson," then you need to stop and ask yourself: "Is it worth it?" Anyone with a heart condition knows that reacting to every little annoyance and frustration with anger can be dangerous; we all need to understand that reacting to driving situations with aggressive driving can be just as fatal as a heart attack.

Fortunately, there are many things you can do to make driving less stressful and make your own responses less emotional:

- Accept the fact that anger will do nothing to get you out of irritating traffic situations. On the contrary, it may get you into collisions. Taking a few slow, deep breaths and forcing yourself to smile are excellent stress-relievers.
- Choose to be a responsible driver. Recognize when you are becoming angry. Then examine why anger seems to reach irrational proportions. Ask yourself: "Why am I getting upset?" Then, try to take the necessary corrective steps. Keep cool.
- Try to avoid the kind of traffic you know is likely to generate anger. The smoother the traffic flow, the less the anger, and the fewer the collisions.
- If you think that you might be converting fear of traffic into anger, take steps to boost your skills and confidence, such as taking a re-training or refresher course.

10 I get regular eye exams to keep my vision at its sharpest.

Eighty-five to ninety-five percent of all sensing clues in driving come through the eyes. Poor visual capacity is directly related to poor driving. Reduced performance from faulty vision shows up in delayed response to signals, signs, and traffic events in ways that can lead to a collision.

Between ages 40 and 60 our night vision becomes progressively worse. Pupils become smaller, the muscles less elastic, and the lenses become thicker and less clear. A 60-year-old driver requires 10 times the light required by a 20-year-old.

As we age we also become more sensitive to glare, which makes driving at night difficult. Your eyes' lenses can become thicker and yellowed with age, resulting in a fogging vision and sensitivity to glare. A 55-year-old takes eight times as long to recover from glare as a 16-year-old.

Drivers receive 98 percent of their visual communication through peripheral vision. Around age 70, peripheral vision can become a serious problem and those with poor peripheral vision have collision rates twice as high as those with normal peripheral vision.

Colors also become harder to see. For example, red colors do not appear bright to many older eyes, and it may take some senior drivers twice as long as it took in earlier years to detect the flash of brake lights.

Another visual ability that declines over the years is depth perception: how close or how far you are in relation to a car or object ahead. This capacity is especially critical when trying to judge how fast other cars are coming, which contributes to the problems you may have in making left turns.

Aging does bring vision problems, but we all share these difficulties in a fairly predictable, natural way. No matter how well you have taken care of your eyes, these problems will develop; however, seeing a doctor on a regular basis is the only way to be sure that your vision is the best it can be. Doctors cannot correct all vision problems, but only doctors can help you with those vision problems that are correctable, such as visual acuity (ability to focus) and disease-related vision loss.

There are several things you can do to handle the loss of vision that comes with aging:

• First and foremost, set up periodic examinations with your eye doctor. Tell the doctor that you are interested not simply in an eye-chart test, but in a thorough examination that will help you to remain a safe driver.

• Take the corrective steps recommended by your doctor. If eyeglasses are prescribed, keep them up to date by letting the doctor know at once if they are not working well for you. If your doctor recommends a cataract operation, keep in mind that this is a simple, out-patient procedure that may dramatically improve your vision.

• Enroll in an older driver training course where you can learn specific techniques for coping with the limits imposed by aging eyes. Attend a ***CarFit*** event, ***car-fit.org***, to learn how to improve your comfort and safety behind the wheel, including properly adjusted mirrors to minimize blind spots in your field of view. You may also learn about how to use special devices, such as larger mirrors, that you can install.

• Accept the limits of "aging eyes," and reduce the amount of driving you do after dark and at twilight (one of the most dangerous times). The chances of having a collision are three times greater at night than in daytime.

• Avoid tinted windshields and always keep your windshield and headlights clean.

I check with my doctor or pharmacist about how the medications I take affect my driving ability.

While you might be wary of the effects of prescription drugs, even over-the-counter drugs can reduce driving ability.

The drugs that slow us down generally also slow down or reduce our capacity to make decisions and process information rapidly. And quick decisions are needed to maneuver a vehicle safely. Tranquilizers or cold remedies, such as cold tablets, cough syrup, and sleeping pills, can reduce driving ability.

Combinations of drugs present another danger, because these combinations can bring on unexpected side effects and bad reactions. If you have more than one doctor prescribing medications without knowing what the others are prescribing, you could be in danger.

Another drug, which you may not think of as a drug, with this same effect is alcohol. Alcohol has a powerful impact on our total system, physical and psychological.

It is important to avoid alcoholic beverages when taking medications. With few exceptions, combining alcohol and other drugs significantly multiplies the impairment of your driving skills. The only safe practice is to avoid alcohol completely if there is any chance that you will have to drive. One's tolerance for alcohol decreases steadily with age. Food, mood, fatigue, medication, general health, weight, and size of body can all make a difference in predicting overall effect. Keep in mind the penalties of driving while impaired by alcohol or other drugs (medications included): heavy fines, jail sentences, and revocation of license.

You can ensure that your medications are not combining to impair your driving skills by taking the following steps:

• Check with your local pharmacist or physician to determine what the side effects of a prescribed medication might be and what, if anything, you can do to counter them, particularly as they apply to driving. Also visit ***AAASeniors.com*** for information on medications and driving.

• If you have more than one physician prescribing medications, make sure all of them know about all the drugs you are taking, both prescribed and over-the-counter. Bring all your medicines with you when you go to the doctor.

• Read all labels and instructions on prescriptions and over-the-counter drugs to determine side effects and their relationship to whether you should drive. Keep in mind that combinations of medicines can magnify their effects beyond the individual warnings.

• Convince yourself that the only safe action is not to drink alcoholic beverages at all if you intend to drive, and to refuse to ride with anyone who has been drinking or who you suspect might be impaired by one or more drugs.

I try to stay informed of current information about health and wellness habits.

What you eat, how much you exercise, and regular visits to the doctor (and following the doctor's advice) can help you keep driving longer and extend your life.

Individual lifestyles have a direct relationship to longevity and quality of life. It all begins with your attitude about how much control you believe you have over the quality of your life. It ends with how much of it you are willing to exercise.

We all want to be able to handle the demands of safe driving. To keep your license, you must remain alert and quick to respond in emergency situations. You also need to keep up to date about health habits that keep your mind and body in shape and able to handle the demands of safe driving.

True, this booklet has emphasized the reductions in driving skills that come with age. But even though research points to changes in the central nervous system as the culprits, you can reduce this slowing down with increased motivation to improve and stay in shape. Exercise reduces the extent of slowing, and extended exercise may eliminate it completely.

Learn to appreciate the close ties between personal health habits and driving skills. The same attitude that encourages you to remain informed on health practices will also help you to feel in control of your future as a driver. You can stay informed by following these steps:

• Be realistic about how much control you have and want in terms of health habits as they relate to your life in general and to your driving.

• Learn more about the relationships between good health practices and how they can help you drive safely longer. Keep in mind that the slowness that comes with aging can be deterred or overcome by motivation, regular exercise, and practice.

• Take as much control as you can of your health habits and lifestyle, recognizing the obvious connection between command of personal health and ability to drive.

• Understand the value of nutrition, exercise, medical check-ups, and the effects of medications, drugs, and alcohol. Your doctor can give you information about all of these areas and tell you where to get more information.

My children, other family members or friends have expressed concern about my driving ability.

It is difficult to accept criticism, but it can be a valuable source of information about your driving skills.

Listen to criticism, so you can improve your driving skills and avoid collisions. Once you start having collisions, the law can take your license away.

Here are some suggestions for how to listen to criticism and comments and turn them into a positive effect on your driving:

• Lend an open ear to the comments of those concerned about your driving, and keep an open mind. Be sure that you are not dismissing the value of these comments out of denial.

• Look for clues to overcome the dangers of those comments that you judge as valid. It is possible that a driving refresher course or corrective action, such as treatment for faulty vision, might help.

• Look at your responses to the other questions in this self-evaluation. Be very honest with yourself, so you can locate specific problem areas and correct them. Human beings are never too old to learn new skills.

• Begin to prepare for the day when driving will no longer be possible for you, so you can remain mobile after you stop driving. With adequate planning, a non-driving life does not have to be restrictive.

How many traffic tickets, warnings, or "discussions" with law enforcement officers have you had in the past two years?

Some older drivers are aware of their limits and cope with them. Others, however, overestimate their real capabilities and do not adjust their driving habits. The most common mistakes among older drivers include failure to yield, failure to observe signs and signals, careless crossing of intersections, changing lanes without due regard for others, improper backing, and driving too slowly. Inattention and having too much information to handle at one time seem to be the root of most of these conditions.

There are several positive steps you can take if you have received traffic tickets or warnings:

• Examine why you got the ticket or warning to determine the true cause. Did you miss a stop sign because you were inattentive or because you simply did not see it? Then act on that information. This booklet contains several specific recommendations for particular problems.

• Use the citation or ticket as a warning sign. Act quickly, since citations relate directly to collisions.

• Enroll in a driver training course where you can brush up on your driving skills and learn new ways to handle the challenges faced by older drivers.

How many collisions (major or minor) have you had during the past two years?

A collision is the best predictor of another collision. One collision is often a signal that others are on the way. Denial of diminishing skills is the older driver's greatest danger. Denial results in a continuation of the most dangerous driving habits and keeps the driver from learning new and better ways to drive. Without correction, dangerous driving habits can lead to tragedy.

If you have been involved in a collision, act at once by taking one or more of the following steps:

• Remember that your insurance may be cancelled if you are involved in too many collisions, even minor ones.

• Take a refresher course. Even if the collision was not your fault, you will learn valuable defensive driving techniques that will help you anticipate trouble before it happens.

• Ask someone whose judgment you trust to ride with you and tell you when you forget to signal or do something else that is unsafe. It is hard to pay attention to traffic and assess our own skills at the same time. An objective assessment is always enlightening.

• If your collision(s) occurred at night or in bad weather, and you suspect that these factors contributed to the collision, avoid driving at these times.

• Begin to prepare for the day when driving will no longer be possible for you, so you can remain mobile after you stop driving. Be honest with yourself; if you are a danger on the road, take responsibility and either improve your skills or stop driving.

Driving Improvement Courses

AAA offers both classroom and online driver improvement courses, including a course designed for older drivers, the ***Mature Operator Course***. Contact your local AAA or CAA club to find out about driving improvement courses available in your area. To reach your local AAA office, use your phone directory or call (407) 444-7000.

CarFit

Developed as a community-based activity, the ***CarFit*** program is designed to improve the "fit" between mature drivers and their vehicles followed by actions they can take to enhance comfort and safety behind the wheel. Developed in collaboration with the American Society on Aging, AARP and the American Occupational Therapy Association, the program also provides an opportunity to open a positive, non-threatening conversation about older driver safety and wellness. In addition, ***CarFit*** offers specific, practical community resources to help older drivers maintain and strengthen their wellness to extend their safe, independent driving years.

Smart Features for Mature Drivers

In partnership with the University of Florida's National Older Driver Research and Training Center, AAA developed a resource guide that identifies vehicle features that can assist drivers with visual, physical and mental changes that are frequently encountered as they age. ***Smart Features for Mature Drivers*** addresses conditions often faced by seniors, highlights features that best address each condition and provides examples of vehicles exemplifying those features.

Roadwise Review Online

Roadwise Review Online is a free screening tool developed to help seniors measure certain mental and physical abilities important to driving. It identifies and provides early warning about declines in critical safe driving abilities. This is one of the first Internet-based self-screening tools available to consumers using scientifically validated measures that predict the risk of causing a crash due to age-related functional decline. It complements and supplements the Performance Checklist in this brochure. You can access ***Roadwise Review Online*** at ***SeniorDrivers.org***.

DriveSharp

DriveSharp is a computer-based software with three interactive exercises clinically proven to help you see more; improve your ability to monitor multiple moving objects - like pedestrians, bicyclists, and other cars; and increase your processing speed. Using DriveSharp you can spot and react to things more quickly, improve your short-term memory; and cut your risk of a car crash by up to 50 percent. Visit ***DriveSharpNow.com*** for more information.

SeniorDrivers.org

SeniorDrivers.org is a wonderful resource for seniors, their family, and researchers to find in-depth information about senior driving. The site offers screening programs to test driving skills, training programs to help seniors improve skills and information about alternative transportation options. It also has a searchable database containing state specific licensing information pertaining to senior drivers. ***Roadwise Review Online***, ***DriveSharp*** brain training and other senior related brochures are all available through the site.

AAASeniors.com

This web site provides expert advice about how aging affects one's ability to drive safely. Users also will find a step-by-step guide on how to begin a conversation with an older driver about the need to work together to develop an action plan for the transition from older driver to passenger. Additionally, users will find a variety of tools and resources from educational brochures and driver improvement courses, to skill assessment tools and free community-based programs.

If you notice that you are beginning to experience some natural age-related changes, you can adjust your driving habits to keep driving safely – after all, one of the most critical assets for safe driving is experience, and experience does not decline with age. It's important to recognize your limitations and to be aware of everything you can do to be safe on the road.

Notes:

AAA Foundation for Traffic Safety is a 501(c)(3) non-profit organization. The Foundation's mission is to prevent traffic deaths and injuries through research into their causes and to educate the public about strategies to prevent crashes and reduce injuries.

AAA Foundation for Traffic Safety | 202-638-5944
607 14th Street, NW, Suite 201, Washington, DC 20005

www.aaafoundation.org

AAAFTS
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How to Understand & Influence Older Drivers

NHTSA
www.nhtsa.gov

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PREFACE

For most of us, driving represents freedom, control, and competence. Driving lets us go to the places we want or need to go. For many of us – even as we get older – driving is important economically. We drive to get to and from work, and sometimes as part of our jobs. Driving is important socially; it lets us stay connected to our communities and favorite activities.

Driving appears to be relatively easy, but in fact it is a complex skill. Our ability to drive safely is affected by changes in our physical and mental conditions. Many of these changes take place as we get older, though in different ways and at different times.

Research shows that age is not the *sole* predictor of driving ability and safety. But there is ample evidence to show that most of us experience age-related declines in our physical and mental abilities – declines that can signal a greater crash risk.

One key to safety is knowing when a driver is at increased risk – even if we ourselves are that driver. So we must know what signs to look for, and pay attention to them. We need to understand how our driving environment changes, and what we should do to respond to those changes. We can learn about community resources that can keep us driving safely longer or keep us connected to the activities in our lives if we must cut back or stop driving altogether.

Driving or riding in a car is how most older adults get around. Most people 65 and older change how they drive as they age, choosing to drive only during daylight hours, for example, or limiting where they drive, or cutting back on how often they drive. This booklet helps families and friends of older drivers understand when and how such changes may be needed and how to keep older persons better connected to the people and activities that are important to them.

This booklet is also intended to broaden the discussion about older driver safety and mobility. It:

- gives information on helping older drivers make informed decisions about their driving behavior, and
- lists suggestions on how to begin conversations with the older driver about safety concerns. These conversations seldom happen often enough, and when they do, the older person fears – sometimes accurately – that someone is trying to take the car keys away. Unfortunately, discussions about continuing to drive often begin too late. And very often, families are asking the wrong questions.

The decision about driving for older adults is an emotionally charged issue, but it does not have to be that way.

TALKING ABOUT DRIVING SAFELY

Talking with an older person about their driving is often difficult. Most of us delay that talk until the person's driving has become what we believe to be dangerous. At that point, conversations can be tense and awkward for everyone involved. But there are things you can say and do to make those conversations more productive and less tense.

To hold such a discussion you should take three steps:

- collect information;
- develop a plan of action; and
- follow through on the plan.

Step 1: Collecting Information

The first step requires family and friends to collect information about what is happening with the older driver. This takes time and may require gathering information from a variety of people who have opportunities to observe the older person's driving.

The more information you collect, the better and more complete a picture of the driver you will have, and the more informed your discussions can be. The information can help you, other family members, health care professionals, and the older driver decide what needs to be done.

A word of caution: It is not uncommon for families, caregivers, and friends to be wrong in their judgment of a driver's risk or driving ability. A person's driving performance – not age – is what determines fitness to drive. Collecting a variety of information can give you more confidence in the accuracy of the determination that something needs to be done.

Even collecting the best information and planning ahead does not mean the decision about what to do with an at-risk or unsafe driver will be easy. But the information and planning can give all concerned more assurance that the best interest of the older driver is at the center of the decision making process.

Your observations

Your concern about the driving behavior of a family member or friend may stem from your observations of the person driving, stories about the

driver, or both. It's important to turn that concern to action. Be deliberate and careful about recording your own observations and observations of other people about the driver. Are there trends that signal the person may be at increased risk while driving? Be sure to date the written notes on your observations. If the driver's physician becomes involved in the driving decision at a later time, the dated notes will become helpful.

To get the most complete picture, collect information not only about their driving but also about other personal indicators (described below) because these may signal the person is at risk while driving.

Driving Observations

Ideally, you will have a conversation about your interest in ensuring that the driver remains safe on the road. Explain that riding with the driver is the best, most practical way to make observations about his or her driving. Another option may be to follow the driver in your own vehicle.

You should watch the person drive at different times of the day, in different types of traffic, and in different road conditions and weather. Over time, a picture will emerge of things the driver can do well and things the driver may not do as well.

You should be paying attention to make sure that the driver:

- stops at all stop signs and looks both ways to check for cross traffic;
- stops at red lights;
- appropriately yields the right-of-way;
- responds properly to other vehicles, motorcyclists, bicyclists, pedestrians, and road hazards;
- merges and changes lanes safely; and
- stays in the lane when turning and driving straight.

In addition, you want to observe whether the person is:

- slowing or stopping inappropriately, such as at green lights or in intersections;
- driving too fast for road conditions;
- driving so slowly as to impede the safe flow of traffic;
- driving aggressively; or
- getting lost routinely on routes that should be familiar for the driver.

Obviously, some of these driving behaviors pose an immediate concern. Drivers must stop at red lights and stop signs, and yield to other cars as the

traffic laws require. Failure to do these things puts the driver and others at extreme risk and requires immediate action to stop the driver.

Non-Driving Observations

Even when older people are not in the car, their actions, statements, or even the way they look may cause you concern or may indicate a problem that could threaten their safety when they are driving. Some of these things you see and hear may be triggered by major events happening in the person's life. These could include the loss of a spouse or a close friend. But an illness or changes in one's medications can also make it hard for the person to drive safely.

No single sign can be taken as a warning that the person is at risk or is an unsafe driver. But if you observe several of the warning signs, you should strongly consider taking action to help.

Such danger signals may include:

- forgetfulness (frequent and combined with other signs);
- unusual or excessive agitation;
- confusion and disorientation;
- loss of coordination and trouble with stiffness in joints;
- trouble walking, swallowing, hearing, or following verbal instructions;
- dizziness when changing positions, tripping, and falling;
- shortness of breath and general fatigue; and
- difficulty following verbal instructions, and/or giving inappropriate responses to those instructions.

At some time or another, many of us may have difficulty with some of the items above. But if you frequently observe these behaviors or signs in a family member or friend, they likely signal the need for you or a health professional to take action. These behaviors can indicate the person is at risk if he or she continues to drive.

Driver Self-Assessment

In addition to your own and others' observations about the older driver, encourage the person to evaluate his or her own driving performance. Several organizations have free self-assessment guides that a person can use. A self-assessment cannot solely determine whether or not the person is a safe driver.

But an assessment may prompt the person to be more open to a conversation with you and other concerned individuals about driving.

- AAA clubs have an assessment tool called "Roadwise Review" that people can use on their computers at home. Roadwise Review takes users through a series of brief tasks that examine a person's vision, reaction time, and other measures related to driving safety. It also directs users to sources of more information about driving safety. Some AAA clubs charge for the screening tool, while others give it away free to members.
- AARP's Driver Safety Program offers its "Are You a Smart Driver" self-assessment quiz, which asks drivers to answer ten questions about today's driving environment and how they react to driving on today's roads. Go to www.aarp.org/home-garden/transportation and click on the link in the "Are You a Smart Driver?" box.
- The AAA Foundation for Traffic Safety has a self-rating tool (http://seniordriving.aaa.com) that asks a person to respond to 15 statements about driving situations and gives suggestions based on the person's answer.

Again, the value of these screening tools listed above is to prompt a person to talk with family and friends and health care professionals, and, if needed, to seek a more formal assessment of driving skills.

Observations of others in your community

Friends and professionals in the community often stand ready to help you get a more complete picture of the person whose safety may be at risk. In developing a complete picture of the older driver, however, it is crucial that you respect that driver's dignity, privacy, and personal autonomy.

If you live in the same city or town, keeping tabs on how well a family member or friend is driving is easier than if you don't live nearby. But either way, you need to build a network of helpers. They may be able to give you information to help determine whether action is needed to keep the older adult driver safe and sound.

Some members of the network – health care professionals including eye care specialists, pharmacists and physicians – cannot speak with you unless and until they have a signed release form from the driver.

Other Resources

Collecting information helps you develop an action plan, if one is needed, to enhance the safety and mobility of the older person. It can also help you to determine if actions need to be taken to reduce a person's driving risk.

Physicians and law enforcement officers are often the first people families and friends go to when they seek outside help for a person they believe to an at-risk or unsafe driver.

Other community resources also exist to help you build a better action plan. These include your local:

- Area Agency on Aging;
- Driving Rehabilitation Specialist
- Department of Motor Vehicles office
- AAA (American Automobile Association) and AARP Driver Safety Programs
- Alzheimer's Association Chapter

Area Agencies on Aging

A network of more than 650 Area Agencies on Aging has been established nationwide to provide information about virtually all programs and services that are helpful to older people, their families, and caregivers. In many cases, Area Agencies can provide information about transportation choices available in the community. An agency may provide some of those programs and services directly or may arrange for them through contracts with other community service organizations. Call the Eldercare Locator at 800-677-1116 and ask for your local Office on Aging, or go to the web site at www.eldercare.gov.

Driver Rehabilitation Specialist

A driver rehabilitation specialist can provide an in-depth evaluation of a person's driving. The specialist can determine if and how a particular disease or condition such as Parkinson's, stroke, or diabetes is affecting a person's driving. The specialist, who is often an occupational therapist, may offer interventions such as training to improve the person's driving safety. The specialist also may suggest installing specialized equipment in the vehicle to keep a person driving safely longer, as well as provide the training on how to use that equipment.

To find a driving rehabilitation specialist near you, go to the American Occupational Therapy Association's Older Driver Resource Center at www.aota.org/en/Practice/Productive-Aging/Driving.aspx, or call the Association of Driver Rehabilitation Specialists at 866-672-9466, or go to its Web site at www.aded.net. You also can call hospitals and rehabilitation facilities in your area to find an occupational therapist to help with the driving skills assessment and intervention.

Department of Motor Vehicles

If, based on your personal observations or knowledge, you are concerned that a family member or friend has a medical condition or has experienced a mental decline that would lead to unsafe driving, contact the State's Department of Motor Vehicles (DMV) where the older driver lives.

In almost every State, a family member can report a driver to the DMV by writing a letter. Your letter should describe specific examples of what you consider to be unsafe driving behavior and/or medical conditions that you believe place the driver at risk. The DMV is required to carefully examine your claims to ensure the driver is not being harassed unfairly. Depending on your State, the letter you write may or may not be confidential, meaning the older driver could find out you have written the letter.

Even if the driver is re-examined and passes the required tests, the DMV may still require future periodic reviews. The DMV may require the driver's physician to submit a report every so often. This would most frequently occur in cases involving an individual who has had seizures, for example. The DMV also might require periodic road tests, such as for people with progressive medical conditions or some forms of dementia. Finally, the DMV may require the driver to submit a report from an eye care specialist if the person has a progressive eye disease such as macular degeneration.

Before contacting the DMV about the person's driving behavior, a family member or friend should carefully consider sitting down with the driver first to discuss the concerns and possible plans of action that best meet everyone's needs and concerns.

AAA/AARP Driver Safety Programs

Several national organizations offer educational programs for older adult drivers. These "refresher" courses present participants with up to 10 hours of classroom tips and reminders about driving safely on today's roads.

AARP's Driver Safety Program is the largest national program that educates older adults on driving safely, self-assessment, and finding transportation alternatives. Go to www.aarp.org/home-garden/transportation/driver_safety and click on the link in the "Find a Class Near You" box.

The AAA and the National Safety Council also offer courses through many of their local offices. Insurers in most States offer a car insurance discount for individuals who complete these classroom "refresher" courses. Sometimes the discount applies for several years after the course is taken. At that time, however, the individual must re-take the course to renew the insurance discount.

Alzheimer's Association Chapter

For someone who has been diagnosed with Alzheimer's disease or other dementia, the issue is not whether the person will have to stop driving, it is *when* that must happen. There are some early and clear warning signs that Alzheimer's is affecting a person's ability to drive safely. These signs include, but are not limited to, when the driver:

- drifts out of the lane;
- becomes confused when exiting or entering a highway;
- has trouble making turns, especially left turns;
- gets lost in familiar places; or
- stops inappropriately – such as at green lights or in the middle of an intersection when not turning.

Local Alzheimer's Association chapters or local Alzheimer's support groups have caring people with expertise in helping families and caregivers deal with the driving issue. To find your local Alzheimer's support group:

- contact your local Area Agency on Aging

  Call the Eldercare Locator at 800-677-1116
  Monday through Friday, 9 a.m. to 8 p.m. (ET),
  or go on-line to www.eldercare.gov.

- Go on-line or call the Alzheimer's Disease Education and Referral Center:

  http://www.nia.nih.gov/alzheimers.
  800-438-4380

Step 2: Developing a Plan of Action

In Step 1, you were encouraged to collect a broad sampling of information about the person's driving, and other behaviors and actions. From this you will need to look at options for formally assessing driving skills, and transportation resources other than driving available in the community.

Once you have this information, sit down and talk with the person to determine:

- Is the person driving safely within the acknowledged limits of his or her capabilities?
- If there is a problem, is it correctable?
- Do other transportation options need to be identified?

Tips for Conversation

If the information you collected indicates a safety problem, you can do several things to increase the likelihood that a conversation about driving will go well.

1. Base the recommendations in the action plan on the observations from Step 1 (page 2).
2. Be sensitive to ways you can help older adults preserve their self-respect. Try reasoning and use compassion. Appreciate the significance of a driver's license to the older person. Empathize with and listen to the older driver.
3. To lead the conversation, pick someone in the family or a trusted friend who the older adult driver may "hear" better than others. In some families, it works better to have just one person have the conversation. In other families, having several family members express their concern will underscore the family's concern for the older person's safety.
4. Present your concerns in the least-threatening terms of your own feelings and perceptions. Use "I" messages rather than "You" messages. For example, say, "I am concerned about your safety when you are driving," rather than, "You're no longer a safe driver."
5. Among the points you might want to make in your conversation:
   - Indicate that you have noticed changes in the person that seem to be making it more difficult to drive.
   - Note that we all age in different ways and at different rates.
   - Reinforce that thousands of older adults each day are taking control of similar situations by changing how and when they drive. Many stop driving at night or avoid rush-hour traffic and bad weather. Many stick to familiar nearby streets and rearrange their schedules to keep doing the things that keep them active in their communities, such as volunteering and socializing.
6. Don't be put off by negative reactions. Remember that it is hard for people to cut back on or stop their driving if they are not ready to do so, or if they believe they are good drivers. Major lifestyle changes are never easy.
7. Highlight a positive outcome by focusing on how the older adult driver will be able to continue to stay connected to specific things that are important. Do *not* judge the person's priorities.
8. If possible, identify a trusted friend or family member who has already had to cut back on or stop driving, and who is taking actions to stay connected to the things that are important to them. Ask if he or she would

be willing to speak with the older person about how it is possible to keep connected to meaningful activities in the community.

If you still believe that there is a safety problem, *work together* to develop a written action plan (see sample plan on page 13.) Ideally, discussing a plan of action should take place *before* problems exist. Regardless of the timing, however, the goal of such a plan should be to preserve the independence and freedom of the person. The plan should keep the person connected to the activities that give meaning to and that enhance the quality of life.

Developing that plan will take time. It will involve a series of conversations with the person. While many concerned family members and friends might play a central role in holding these conversations, others might turn to health professionals, such as a physician, to start and/or continue the discussion about driver safety. In many of those cases, the family and friends serve more in a support role for the older person.

The focus of any action plan should be (1) to enhance the independence and decision-making of the older adult, and (2) to maximize community safety. Determine if there are situations where the person can continue to drive successfully. In some cases, the plan may require changing the time of day when the older person does errands or drives to appointments to avoid heavy traffic. In other cases, the plan may require changing places where one shops or socializes with friends to avoid driving on busy roads or in more dangerous driving situations. It may also mean doing an activity less often or arranging for the person to carpool to an activity and thus share the driving responsibility.

Implementing a plan that changes how and when a person drives can have an enormous effect on families. Families themselves often must begin to play more active roles in ensuring the older adult can continue to get around the community. For family members who live nearby, the change in roles may mean providing rides for the older person; whereas for family who live more than an hour away, the change could mean spending time on the phone to coordinate transportation services or providing financial support to pay for those services.

Action plans range from the simple to the complex. An action plan might call for the older adult to get a formal driving evaluation from a driving rehabilitation specialist to identify areas of strength and need. A plan also might clearly spell out ways people can get to events and activities when they cannot drive themselves.

Many communities have programs offered through public transportation systems that give people practice and confidence in using public transportation to get around. Still, many older adults are reluctant for several reasons to use public transportation when they stop driving. Some older adults with health problems may not find these options practical or possible. Therefore, it is important for older adults to become familiar with and confident using transportation alternatives *before* they are asked to become reliant on alternatives to their car.

As noted earlier, *Area Agencies on Aging* have information about virtually all transportation programs and services in their areas. To find information about your local Area Agency on Aging, contact the Eldercare Locator, a national service you can call toll-free at 800-677-1116. Ask for your local Office on Aging, or go to the Web site at www.eldercare.gov.

Step 3: Following Through on the Plan

Older adult drivers should be deeply involved in every step of their transportation planning and implementation process. Doing so demonstrates that family members respect the older person's opinions and needs, are genuinely concerned about the older person's safety, and have given the issue significant thought, time, and attention. The conversation about putting the plan into action needs to be approached with sensitivity and respect for the older person. Even if the older person has been involved in developing the action plan, the conversation can easily provoke anger, defensiveness and denial. This is less likely to happen if the older driver has been involved in each step of the planning process.

Review the Plan Periodically

Over time, changes in a person's abilities or even interests can mean that adjustments need to be made to the older person's action plan so that he or she can get around the community safely. Therefore, it is important to review the transportation plan at least twice a year to ensure it still works for the person who has had to reduce or stop his or her driving.

Families and friends also need to remember that many communities are developing new community transportation resources and are refining existing ones. Some of these new resources may better meet the needs of the older person than those that you have listed in your current plan. The key: keep in touch with your local Area Agency on Aging to find out if new and better choices are available to the older person.

DEVELOPING A MOBILITY ACTION PLAN

The goal of the action plan is to keep the older person on the go ("mobile") in and around the community and connected to the activities that give the person's life meaning. Ideally, the person who is cutting back on driving or stopping driving can continue to take part in all current activities. But that person may need to find other ways to get to the activity, to get an errand completed, or to find other times to participate in such activities.

Case in Point

William, 79, has been playing cards with a group of friends each Wednesday evening for the past six years. But during the past several months, driving at night has become more difficult because of the glare of headlights. William does not want to ask his son for a ride, public transportation doesn't run close to his friend's house where the game is always held, and taxis don't fit in his budget. Yet William also doesn't want to give up playing, which keeps him connected with friends and gets him out of the house for one of the few times each week to socialize. After a few phone calls, William works out that he'll host the game once a month and those other times he'll bring refreshments to the game in exchange for one of his playing partners driving him to the game.

In filling out the chart below, list *all* of those activities that fit. Do not leave off events or activities because you believe they are not "essential." Again, the goal of this action plan is to list needs and find alternative ways, if necessary, to meet those needs. It may be accomplished by changing the times or locations where the activities take place, identifying alternative means of getting to the activities, or agreeing to carpool or share rides to activities. For example, if a person has difficulty getting out to the grocery store, the person should consider the value of having groceries delivered to the house.

Routine Errands

(List activities such as going to the grocery store, the pharmacy, the hairdresser, or the doctor.)

Activity	How You Get There Now	New Ways to Complete Errand

Regular Educational, Social or Religious Events/Activities

(List events that happen at least once a month, such as going to an adult learning center, senior center or attending religious services.)

Activity	How You Get There Now	New Ways to Get There

Other Community, Social and/or Special Events

(List special events such as birthday parties, community fairs, voting, or events that may happen on the spur of the moment, such as going out to dinner or a movie.)

Activity	How You Get There Now	New Ways to Get There

NOTES

DOT HS 810 633
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Specialize in the Care of Older Adults

TIP SHEET

10 Tips for Aging Well

Simply living longer isn't enough. What we really want is to live longer well, staying healthy enough to continue doing the things we love. While having good genes certainly helps, a growing body of research suggests that how well you age depends largely on you and what you do. Fortunately, research also finds that it's never too late to make changes that can help you live a longer and healthier life.

Here, from the American Geriatrics Society's Health in Aging Foundation, are ten tips for living longer and better:

Eat a rainbow

You need fewer calories when you get older, so choose nutrient-rich foods like brightly colored fruits and vegetables. Eat a range of colors— the more varied, the wider the range of nutrients you're likely to get. Aim for two servings of salmon, sardines, brook trout, or other fish rich in heart healthy omega-3 fatty acids a week. Limit red meat and whole-fat dairy products. And choose whole grains over the refined stuff.

Sidestep falls

Walking as little as 30 minutes, three times a week can help you stay physically fit and mentally sharp, strengthen your bones, lift your spirits—and lower your risk of falls. That's important because falls are a leading cause of fractures, other serious injuries, and death among older adults. Bicycling, dancing, and jogging are also good weight-bearing exercises that can help strengthen your bones. In addition to exercising, get plenty of bone-healthy calcium and vitamin D daily.

Toast with a smaller glass

Drinking a moderate amount of alcohol may lower your risks of heart disease and some other illnesses. But what's "moderate" changes with age. It means just 1 drink per day for older men and ½ a drink daily for older women. (A "drink" is 1 oz of hard liquor, 6 oz of wine, or 12 oz of beer.) Since alcohol can interact with certain drugs, ask your healthcare professional whether any

Know the low-down on sleep in later life

Contrary to popular belief, older people don't need less sleep than younger adults. New recommendations from the National Sleep Foundation suggest 7 to 8 hours of shut-eye a night. If you're getting that much and are still sleepy during the day, see your healthcare professional. You may have a sleep disorder called sleep apnea. People with sleep apnea stop breathing briefly, but repeatedly, while sleeping. Among other things, untreated sleep apnea can increase your risk of developing heart disease.

Flatten your (virtual) opponent, sharpen your mind

Conquering your adversary in a complex computer game, joining a discussion club, learning a new language, and engaging in social give-and-take with other people can all help keep your brain sharp, studies suggest.

Enjoy safe sex

Older adults are having sex more often and enjoying it more, research finds. Unfortunately, more older people are also being diagnosed with sexually transmitted diseases. To protect yourself, use a condom and a lubricant every time you have sex until you're in a monogamous relationship with someone whose sexual history you know.

Get a medications check

When you visit your healthcare professional, bring either all of the prescription and over-the-counter medications, vitamins, herbs and supplements you take, or a complete list that notes the names of each, the doses you take, and how often you take them. Ask your healthcare provider to review everything you brought or put on your list. He or she should make sure they're safe for you to take, and that they don't interact in harmful ways. The older you are, and the more medicines you take, the more likely you are to experience medication side effects, even from drugs bought over-the-counter.

Speak up when you feel down or anxious

Roughly 1 in 5 older adults suffers from depression or anxiety. Lingering sadness, tiredness, loss of appetite or pleasure from things you once enjoyed, difficultly sleeping, worry, irritability, and wanting to be alone much of the time can all be signs that you need help. Tell your healthcare professional right away. There are many good treatments for these problems.

Get your shots

They're not just for kids! Must-have vaccines for seniors include those that protect against pneumonia, tetanus/diphtheria, shingles, and the flu, which kills thousands of older adults in the US every year.

Find the right healthcare professional and make the most of your visits

See your healthcare professional regularly, answer his or her questions frankly, ask any questions you have, and follow his or her advice. If you have multiple, chronic health problems, your best bet may be to see a geriatrics healthcare professional—someone with advanced training that prepares her to care for the most complex patients. The AGS' Health in Aging Foundation can help you find one; visit www.healthinaging.org.

HEALTH IN AGING FOUNDATION
THE OFFICIAL FOUNDATION OF THE AMERICAN GERIATRICS SOCIETY

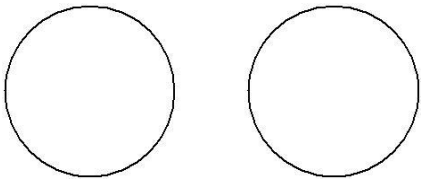
40 FULTON STREET
18TH FLOOR
NEW YORK, NY 10038
212.308.1414 TEL
212.832.8646 FAX
Info@healthinaging.org

CLINICAL TEAM RESOURCES

CADReS Score Sheet

Name:_____ Date: _____

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



Patient's L R

2. **Visual acuity:**_ _____OD _____ OS _____OU

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

   _____

   If acuity in either eye is worse than 20/40, consider referral to ophthalmologist.

3. **Rapid pace walk:**_____ seconds

   Longer than 10 seconds is abnormal; consider referral for driving evaluation and/or evaluation of gait disorder. Was test performed with a walker or cane? If yes, please specify:

   _____

4. **Range of motion:** Specify "within normal limits (WNL)" or "not WNL." If not WNL, describe.

	Right	Left
Neck rotation		
Finger curl		
Shoulder and elbow flexion		
Ankle plantar flexion		
Ankle dorsiflexion		

   With any deficiencies or pain, consider referral to physical therapy for exercises or pain management or to occupational therapy if impacting ADLs/IADLs as indicated, and/or consider referral for comprehensive driving evaluation if adaptation for driving is needed.

5. **Maze Test**: Risk Categories _____ Seconds _____ Errors _____

If completed in 61 seconds or longer, with or without errors, then the person is not cognitively fit to drive safely.
If completed in up to 60 seconds, but with two or more errors, then the person is not cognitively fit to drive safely.

If completed in up to 60 seconds, with zero or one error, then the person is cognitively fit to drive safely.

6. **MoCA:** Total score:_____

   A score of 26 or above is normal (add a point if the older adult has less than 12 years of formal education). A score of 18 or less indicates driving safety risk. A score above 18 but below 26 warrants further evaluation, including a comprehensive driving evaluation.

7. **Trail-Making Test, Part B:**____ seconds

   A score longer than 180 seconds is abnormal; consider referral for a comprehensive driving evaluation and/or evaluation for cognitive, visual, or motor impairment.

8. **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.		

If any elements are abnormal, consider referral for a comprehensive driving evaluation clinic and/or evaluation for cognitive, visual, or motor impairment.

Assessment/Plan

Table of Selected Studies Supporting the use of Screening Tools in CADReS

Citation	Target Population	Tools (significant)/Outcome Measure	Main Findings
Classen, S., Witter, D. P., Lanford, D. N., Okun, M. S., Rodriguez, R. L., Romrell, J., et al. (2011).	Parkinson's Disease	MMSE Rapid Pace Walk UFOV Acuity Contrast Sensitivity Outcome: Global rating score (on road outcome) and maneuvers scores for on road assessment	Individuals with PD did more poorly on UFOV, Rapid Pace Walk, global score of the BTW, and maneuvers scores. UFOV and Rapid Pace Walk accounted for most of variance with the on-road test and can be considered as good screening tools for PD.
Zook, N. A., Bennett, T. L., & Lane, M. (2009).	Older adult	Hopkins verbal learning task Integrated visual and auditory continuous performance Trails B Outcome: on road assessment	Hopkins verbal learning test, Integrated visual and auditory continuous performance, and Trails B more predictive of on-road than CBDI or UFOV.
Stav W. B., Justiss, M. D., McCarthy D. P., Mann, W. C., & Lanford, D. N. (2008).	Older adults	Contrast Sensitivity, slide B Rapid Pace Walk UFOV Rating MMSE total score Outcome: Global Rating Scale of the standardized road test	Using stepwise regression, the strongest model included: Contrast Sensitivity slide-B, Rapid Pace Walk, UFOV rating, and MMSE total score. These accounted for 44% of the variability in Global Rating Scale of the standardized road test. All assessments listed were significantly correlated with the Global Rating Score individually.
Wood, J. M., Anstey, K. J., Kerr, G. K., Lacherez, P. F., & Lord, S. (2008)	Older adults	UFOV 2 Dot motion sensitivity Knee extension strength Postural sway Trails B Color choice reaction time Outcome: on road assessment	UFOV 2, dot motion sensitivity, knee extension strength, postural sway, trail making B, and color choice reaction time were significantly correlated with on road assessment performance. Sensitivity: 91%, specificity: 70%

Molnar, F. J., Marshall, S. C., Man-Son-Hing, M., Wilson, K. G., Byszewski, A. M., & Stiell, I. (2007).	Older adults	MMSE Driving habits Ottawa Driving & dementia Bothered by diabetes Timed Toe Tap Test Outcome: motor vehicle crashes	Used assessment battery in ER for acceptability and potential predictors of crashes. Significant positive associations with past or current MVC were found for components of: MMSE, Driving Habits, Ottawa Driving and Dementia, "bothered a great deal by Diabetes Mellitus", and the Timed Toe Tap Test.
De Raedt, R., & Ponjaert-Kristoffersen, I. (2001). De Raedt, R., & Ponjaert-Kristoffersen, I. (2001).	Older adults	Trail A Acuity Clock drawing Age as factor Outcome: on road assessment	Battery included: MMSE, Trail making, acuity, clock drawing, age as factor MMSE did not add anything to model. Combined: Specificity – 85% Sensitivity – 80%
Owsley, C., Stalvey, B.T., Wells, J., Sloane, M. E., & McGwin, G. (2001).	274 older adults with cataracts and 103 without	Tested for acuity, contrast sensitivity, and glare.	Contrast sensitivity strongly related to crashes, especially when in two eyes, but also one. Visual acuity – not related to crashes.
Decina, L.E. & Staplin, L. (1993).		Visual exams of 12,400 drivers in PA.	Acuity, visual fields, contrast sensitivity related to crashes for drivers 66-75 years and 76 years & over.
Freeman, E.E., Munoz, B., Turano, K.A., & West, S.K. (2005).	Older adults	Salisbury Eye Evaluation Project, 2520 older adults followed for 8 years with 4 collection points.	Driving cessation over time: Those with worse scores in acuity, contrast sensitivity, and visual field cut most likely to cease driving.
Crizzle, A.M., Classen, S., & Uc, Y. (2012).	PD	Evidence review that examined measures for predicting on road and simulator performance.	No standard battery is able to predict driving performance of PD, more vigorous studies needed. Some evidence for subtest 2 of UFOV, contrast sensitivity, Trails B and B-A, functional reach, Rey-Osterrieth Complex Figure Test.
Classen, S., McCarthy, D. P., Shechtman, O., Awadzi, K. D., Lanford, D.N., Okun, M. S., Rodriguez, R. L., Romrell, J., Bridges, S., Kluger, B., & Fernandez, H.	PD	19 individuals with Parkinson's Disease and 104 age matched controls. Compared UFOV with on road assessment outcome, global rating scale, and sum of maneuvers scale.	UFOV had strongest correlations with on road and driving errors. Those who failed on-road did worse on Trails B and UFOV than those who passed. Cut off scores for UFOV subtests suggested.

H. (2009).			
Amick, M. M., Grace, J., & Ott, B. R. (2007).	PD	25 with Parkinson's Disease with two of three physical issues (tremor, bradykinsesia, and rigidity). No cognitive impairments. Compared assessments to on road performance.	Safe and marginal groups performed differently on contrast sensitivity, Trails B (time), Rey-O presence/accuracy, UFOV subtest 3.
Uc, E.Y., Rizzo, M., Anderson, S.W., Shi, Q., & Dawson, J.D. (2005).	AD	33 Alzheimer's compared to 137 normal controls on cognitive tests, vision tests, on road drive to identify landmarks and traffic signs.	Significant difference between groups in landmark and traffic identification; Driving errors higher in AD group; Trails B, auditory verbal learning test, contrast sensitivity, judgment of line orientation were predictors of total landmark and traffic sign identification.
Grace, J., Amick, M. M., D'Abreu, A., Festa, E. K., Heindel, W. C., & Ott, B. R. (2005).	AD	21 dementia, 21 Parkinson, 21 controls. Compared motor and cognitive function with on road performance.	Dementia made significantly more errors on on-road than controls; Rey-Osterrieth figure was sensitive to poor on road performance, Trails A and B sensitive to dementia subjects.
Whelihan, W.M., DiCarlo, M.A., & Paul, R.H. (2004).	AD	23 with CDR of .5 and 23 controls. Battery of screening measures compared with outcome measure of road assessment.	Trails B, Maze navigation time, UFOV, letter cancelation significantly related to on-road for patient group, but for controls, it was only age. Regression showed maze navigation time, Trails B time, and UFOV part 1 accounted for 46% of variance (Trails B added insignificantly). UFOV too challenging for even early dementia. Maze navigation may be good screening tool.
Jones, V. C., Gielen, A. C., Bailey, M. M., Rebok, G. W., Gaines, J. M., Joyce, J. & Parrish, J. M. (2011).	Older adults	67 older adults screened with four of 9 assessment tools. High-risk completed qualitative interviews.	Identifying low, medium and high risk impairment of older adults with assessments and crash outcomes. Only Trails B differentiated the medium from the high risk group. UFOV and MVPT did not.
Edwards, J. D., Bart, E., O'Connor, M. L., & Cissell, G. (2010).	Older adults	1,248 participants tested at baseline and 5 years later on physical and cognitive issues.	Final regression models: Age at baseline, days driven per week and slower processing speed (UFOV performance, subtest 2) were significant indicators of risk for driving cessation. Other models showed rapid pace walk,

			MVPT, Trails B.
Munro, C.A., Jefferys, J., Gower, E. W., Munoz, B. E., Lyketsos, C. G., Keay, L., … West, S. K. (2010).	Older adults	980 adults 67-87 years who had lane change data Subjects enrolled in the Salisbury Eye Evaluation and Driving Study	Significant predictors of lane change errors included: Brief Test of Attention, Hopkins, Trails B, VMI, and Visual Attention. Multiple regression demonstrated: Brief Test of Attention and VMI scores predicted lane change errors. Also those participants that resided in rural vs. urban predicted lane change error. Made on assumption that lane change translates into errors of driver safety.
Classen, S., Horgas, A., Awadzi, K., Messinger-Rapport, B., Shechtman, O., & Joo, Y. (2008).	Older adults	127 older adults to compare demographics, cognitive functioning, comorbidities, medications, and failing driving evaluation.	The strongest predictor of failing the BTW was advanced age, and time to complete Trails B were major predictors of failure and driving errors. Having a neurological diagnosis was associated with test failure and increased driving errors.
Oswanski, M. F., Sharma, O. P., Raj, S. S., Vassar, L. A., Woods, K. L., Sargent, W. M., & Pitock, R. J. (2007).		Retrospective study 232 over 55 years old referred to driving program. Subjects categorized into two groups: capable & incapable	Mean score for the three measurements significantly different between two groups. ROC for MVPT was $\geq$32 with 60% sensitivity and 83% specificity. ROC clock task was $\geq$3 with 70% sensitivity and 65% specificity. Processing time $\leq$ 6.27 seconds with 61% sensitivity and 79% specificity

This table was modified from tables developed with funding from the Gaps and Pathways Project, the AOTA/NHTSA Cooperative Agreement.

Medical Advisory Board Example Letter

[Official letterhead, state licensing authority or the state transportation Medical Advisory Board]

Dear Mr./Mrs. _____:

You are receiving this letter because it has come to our attention that you may have a medical condition that could affect your driving. Please provide the information requested on the enclosed form within the next 30 days.

Upon receipt of your form, our staff will perform a thorough, individual review of your medical fitness to continue driving. Additional information or assessments may be requested in order to complete your review. This may include information from your primary health care provider or an assessment by a driving rehabilitation specialist.

The purpose of this action is safety for you, your family, and the community. Because of the broader commitment to highway safety, drivers that fail to respond and/or provide the information requested by the due date may be considered for suspension of their driving privilege.

Sincerely,

State Licensing Authority/ State Transportation Medical Advisory Board

Modified Driving Habits Questionnaire

Current Driving

1. Do you wear glasses or contacts when you drive? ____ Yes ____ No

2. Do you wear a seatbelt when you drive? ____ Always ____ Sometimes ____ Never

3. Which way do you prefer to get around?
   ____ Drive yourself
   ____ Have someone drive you
   ____ Use public transportation or a taxi

4. How fast do you usually drive compared with the general flow of traffic?
   ____ Much faster ____ Somewhat slower
   ____ Somewhat faster ____ Much slower
   ____ About the same

5. Has anyone suggested over the past year that you limit your driving or stop driving?
   ____ Yes ____ No

6. How would you rate the quality of your driving?
   ____ Excellent ____ Good ____ Average ____ Fair ____ Poor

7. If you had to go somewhere and didn't want to drive yourself, what would you do?
   ____ Ask a friend or relative to drive you
   ____ Call a taxi or take the bus
   ____ Drive yourself regardless of how you feel
   ____ Cancel or postpone your plans and stay at home
   ____ Other (specify): _____

Exposure

8. In an average week, how many days per week do you normally drive? ___ days per week

9. Please consider all the places you drive in a typical week. Check those places and list how many times a week and the number of miles from home.

___ Store	____ times a week	____ miles from home
___ Church	____ times a week	____ miles from home
___ Work/School	____ times a week	____ miles from home
___ Relative's home	____ times a week	____ miles from home
___ Friend's home	____ times a week	____ miles from home

____ Out to eat ____ times a week ____ miles from home
____ Appointments ____ times a week ____ miles from home

Are there other places you go in a typical week?
_____ ____ times a week ____ miles from home
_____ ____ times a week ____ miles from home
_____ ____ times a week ____ miles from home

Avoidance

13a. During the past 3 months, have you driven while it has been raining?
____ Yes (go to 13b)
____ No (go to 14)

13b. Would you say that you drive when it is raining with: (please check only one answer)
____ No difficulty at all
____ A little difficulty
____ Moderate difficulty
____ Extreme difficulty

14a. During the past 3 months, have you driven alone?
____ Yes (go to 14b)
____ No (go to 15)

14b. Would you say that you drive alone with: (check only one answer)
____ No difficulty at all
____ A little difficulty
____ Moderate difficulty
____ Extreme difficulty

15a. During the past 3 months, have you parallel parked?
____ Yes (go to 15b)
____ No (go to 15c)

15b. Would you say that you parallel park with: (check only one answer)
____ No difficulty at all
____ A little difficulty
____ Moderate difficulty
____ Extreme difficulty

15c. Why do you not parallel park?
____ Not necessary (not many parallel parking spots)
____ Visual problems
____ Never learned how

____ Other (specify) _____

16a. During the past 3 months, have you made left-hand turns across oncoming traffic?
____ Yes (go to 16b)
____ No (go to 17)

16b. Would you say that you make left-hand turns in traffic with: (check only one answer)
____ No difficulty at all
____ A little difficulty
____ Moderate difficulty
____ Extreme difficulty

17a. During the past 3 months, have you driven on interstates or expressways?
____ Yes (go to 17b)
____ No (go to 18)

17b. Would you say that you drive on interstates or expressways with: (check only one answer)
____ No difficulty at all
____ A little difficulty
____ Moderate difficulty
____ Extreme difficulty

18a. During the past 3 months, have you driven on high-traffic roads?
____ Yes (go to 18b)
____ No (go to 19)

18b. Would you say that you drive on high-traffic roads with: (check only one answer)
____ No difficulty at all
____ A little difficulty
____ Moderate difficulty
____ Extreme difficulty

19a. During the past 3 months, have you driven in rush hour traffic?
____ Yes (go to 19b)
____ No (go to 20)

19b. Would you say that you drive in rush hour traffic with: (check only one answer)
____ No difficulty at all
____ A little difficulty
____ Moderate difficulty
____ Extreme difficulty

20a. During the past 3 months, have you driven at night?

____ Yes (go to 20b)
____ No (go to 21)

20b. Would you say that you drive at night with: (check only one answer)
____ No difficulty at all
____ A little difficulty
____ Moderate difficulty
____ Extreme difficulty

Crashes and Citations

21. How many crashes have you been involved in over the past year when you were the driver? Please list the number of all crashes, whether or not you were at fault.
____ crashes

22. How many crashes have you been involved in over the past year when you were the driver where the police were called to the scene?
____ crashes

23. How many times over the past year have you been pulled over by the police, regardless of whether you received a ticket?
____ times

24. How many times in the past year have you received a traffic ticket (other than a parking ticket) where you were found to be guilty, regardless of whether or not you think you were at fault?
____ times

Driving Space

25. During the past year, have you driven in your immediate neighborhood?
___ Yes ___ No

26. During the past year, have you driven to places beyond your neighborhood?
___ Yes ___ No

27. During the past year, have you driven to neighboring towns?
___ Yes ___ No

28. During the past year, have you driven to more distant towns?
___ Yes ___ No

29. During the past year, have you driven to places outside the state where you live?
___ Yes ___ No

30. During the past year, have you driven to neighboring states?

___ Yes ___ No

Modified with permission from the Driving Habit Questionnaire (DHQ)

Owsley C, Stalvey B, Wells J, et al. Older drivers and cataracts: driving habits and crash risk. *J Gerontol: Med Sci.* 1999;54A:M203–M211.

Montreal Cognitive Assessment (MoCA)
Version 8.1

Administration and Scoring Instructions

The Montreal Cognitive Assessment (MoCA) was designed as a rapid screening instrument for mild cognitive dysfunction. It assesses different cognitive domains: attention and concentration, executive functions, memory, language, visuoconstructional skills, conceptual thinking, calculations, and orientation. The MoCA may be administered by anyone who understands and follows the instructions, however, only a health professional with expertise in the cognitive field may interpret the results. Time to administer the MoCA is approximately 10 minutes. The total possible score is 30 points; a score of 26 or above is considered normal.

All instructions may be repeated once.

1. Alternating Trail Making:

Administration: The examiner instructs the subject: *"Please draw a line going from a number to a letter in ascending order. Begin here* [point to (1)] *and draw a line from 1 then to A then to 2 and so on. End here* [point to (E)]."

Scoring: One point is allocated if the subject successfully draws the following pattern: 1- A- 2- B- 3- C- 4- D- 5- E, without drawing any lines that cross. Any error that is not immediately self-corrected (meaning corrected before moving on to the Cube task) earns a score of 0. A point is not allocated if the subject draws a line to connect the end (E) to the beginning (1).

2. Visuoconstructional Skills (Cube):

Administration: The examiner gives the following instructions, pointing to the cube: "*Copy this drawing as accurately as you can."*

Scoring: One point is allocated for a correctly executed drawing.

- Drawing must be three-dimensional.
- All lines are drawn.
- All lines meet with little or no space.
- No line is added.
- Lines are relatively parallel and their length is similar (rectangular prisms are accepted).
- The cube's orientation in space must be preserved.

A point is not assigned if any of the above criteria is not met.

3. Visuoconstructional Skills (Clock):

Administration: The examiner must ensure that the subject does not look at his/her watch while performing the task and that no clocks are in sight. The examiner indicates the appropriate space and gives the following instructions: *"Draw a clock. Put in all the numbers and set the time to 10 past 11."*

Scoring: One point is allocated for each of the following three criteria:

• Contour (1 pt.): the clock contour must be drawn (either a circle or a square). Only minor distortions are acceptable (e.g., slight imperfection on closing the circle). If the numbers are arranged in a circular manner but the contour is not drawn the contour is scored as incorrect.
• Numbers (1 pt.): all clock numbers must be present with no additional numbers. Numbers must be in the correct order, upright and placed in the approximate quadrants on the clock face. Roman numerals are acceptable. The numbers must be arranged in a circular manner (even if the contour is a square). All numbers must either be placed inside or outside the clock contour. If the subject places some numbers inside the clock contour and some outside the clock contour, (s)he does not receive a point for Numbers.
• Hands (1 pt.): there must be two hands jointly indicating the correct time. The hour hand must be clearly shorter than the minute hand. Hands must be centered within the clock face with their junction close to the clock center.

4. Naming:

Administration: Beginning on the left, the examiner points to each figure and says: *"Tell me the name of this animal."*

Scoring: One point is given for each of the following responses: (1) lion (2) rhinoceros or rhino (3) camel or dromedary.

5. Memory:

Administration: The examiner reads a list of five words at a rate of one per second, giving the following instructions*: "This is a memory test. I am going to read a list of words that you will have to remember now and later on. Listen carefully. When I am through, tell me as many words as you can remember. It doesn't matter in what order you say them."* The examiner marks a check in the allocated space for each word the subject produces on this first trial. The examiner may not correct the subject if (s)he recalls a deformed word or a word that sounds like the target word. When the subject indicates that (s)he has finished (has recalled all words), or can recall no more words, the examiner reads the list a second time with the following instructions: *"I am going to read the same list for a second time. Try to remember and tell me as many words as you can, including words you said the first time."* The examiner puts a check in the allocated space for each word the subject recalls on the second trial. At the end of the second trial, the examiner informs the subject that (s)he will be asked to recall these words again by saying: *"I will ask you to recall those words again at the end of the test."*

Scoring: No points are given for Trials One and Two.

6. Attention:

Forward Digit Span: Administration: The examiner gives the following instructions: "*I am going to say some numbers and when I am through, repeat them to me exactly as I said them.*" The examiner reads the five number sequence at a rate of one digit per second.

Backward Digit Span: Administration: The examiner gives the following instructions: "*Now I am going to say some more numbers, but when I am through you must repeat*

them to me in the backward order." The examiner reads the three number sequence at a rate of one digit per second. If the subject repeats the sequence in the forward order, the examiner may not ask the subject to repeat the sequence in backward order at this point.

Scoring: One point is allocated for each sequence correctly repeated (N.B.: the correct response for the backward trial is 2-4-7).

Vigilance: Administration: The examiner reads the list of letters at a rate of one per second, after giving the following instructions: "*I am going to read a sequence of letters. Every time I say the letter A, tap your hand once. If I say a different letter, do not tap your hand.*"

Scoring: One point is allocated if there is zero to one error (an error is a tap on a wrong letter or a failure to tap on letter A).

Serial 7s: Administration: The examiner gives the following instructions: *"Now, I will ask you to count by subtracting 7 from 100, and then, keep subtracting 7 from your answer until I tell you to stop."* The subject must perform a mental calculation, therefore, (s)he may not use his/her fingers nor a pencil and paper to execute the task. The examiner may not repeat the subject's answers. If the subject asks what her/his last given answer was or what number (s)he must subtract from his/her answer, the examiner responds by repeating the instructions if not already done so.

Scoring: This item is scored out of 3 points. Give no (0) points for no correct subtractions, 1 point for one correct subtraction, 2 points for two or three correct subtractions, and 3 points if the subject successfully makes four or five correct subtractions. Each subtraction is evaluated independently; that is, if the subject responds with an incorrect number but continues to correctly subtract 7 from it, each correct subtraction is counted. For example, a subject may respond "92 – 85 – 78 – 71 – 64" where the "92" is incorrect, but all subsequent numbers are subtracted correctly. This is one error and the task would be given a score of 3.

7. Sentence repetition:

Administration: The examiner gives the following instructions: *"I am going to read you a sentence. Repeat it after me, exactly as I say it* [pause]: ***I only know that John is the one to help today.****"* Following the response, say: *"Now I am going to read you another sentence. Repeat it after me, exactly as I say it* [pause]: ***The cat always hid under the couch when dogs were in the room.****"*

Scoring: One point is allocated for each sentence correctly repeated. Repetitions must be exact. Be alert for omissions (e.g., omitting "only"), substitutions/additions (e.g., substituting "only" for "always"), grammar errors/altering plurals (e.g. "hides" for "hid"), etc.

8. Verbal fluency:

Administration: The examiner gives the following instructions: *"Now, I want you to tell me as many words as you can think of that begin with the letter F. I will tell you to stop after one minute. Proper nouns, numbers, and different forms of a verb are not permitted. Are you ready?* [Pause] [Time for 60 sec.] *Stop."* If the subject names two consecutive

words that begin with another letter of the alphabet, the examiner repeats the target letter if the instructions have not yet been repeated.

Scoring: One point is allocated if the subject generates 11 words or more in 60 seconds. The examiner records the subject's responses in the margins or on the back of the test sheet.

9. Abstraction:

Administration: The examiner asks the subject to explain what each pair of words has in common, starting with the example: *"I will give you two words and I would like you to tell me to what category they belong to* [pause]: *an orange and a banana.*" If the subject responds correctly the examiner replies: *''Yes, both items are part of the category Fruits.''* If the subject answers in a concrete manner, the examiner gives one additional prompt: *"Tell me another category* to *which these items belong to."* If the subject does not give the appropriate response *(fruits)*, the examiner says: *"Yes, and they also both belong to the category Fruits."* No additional instructions or clarifications are given. After the practice trial, the examiner says: *"Now, a train and a bicycle."* Following the response, the examiner administers the second trial by saying: *"Now, a ruler and a watch."* A prompt (one for the entire abstraction section) may be given if none was used during the example.

Scoring: Only the last two pairs are scored. One point is given for each pair correctly answered. The following responses are acceptable:

- train-bicycle = means of transportation, means of travelling, you take trips in both
- ruler-watch = measuring instruments, used to measure

The following responses are **not** acceptable:

- train-bicycle = they have wheels
- ruler-watch = they have numbers

10. Delayed recall:

Administration: The examiner gives the following instructions: *"I read some words to you earlier, which I asked you to remember. Tell me as many of those words as you can remember."* The examiner makes a check mark (√) for each of the words correctly recalled spontaneously without any cues, in the allocated space.

Scoring: **One point is allocated for each word recalled freely without any cues.**

Memory index score (MIS):

Administration: Following the delayed free recall trial, the examiner provides a category (semantic) cue for each word the subject was unable to recall. Example: ''*I will give you some hints to see if it helps you remember the words, the first word was a body part*.'' If the subject is unable to recall the word with the category cue, the examiner provides him/her with a multiple choice cue. Example: *"Which of the following words do you think it was, NOSE, FACE, or HAND?"* All non-recalled words are prompted in this manner. The examiner identifies the words the subject was able to recall with the help of a cue (category or multiple-choice) by placing a check mark (√) in the appropriate space. The cues for each word are presented below:

Target Word	Category Cue	Multiple Choice
FACE	body part	nose, face, hand (shoulder, leg)
VELVET	type of fabric	denim, velvet, cotton (nylon, silk)
CHURCH	type of building	church, school, hospital (library, store)
DAISY	type of flower	rose, daisy, tulip (lily, daffodil)
RED	color	red, blue, green (yellow, purple)

* The words in parentheses are to be used if the subject mentions one or two of the multiple choice responses during the category cuing.

Scoring: To determine the MIS (which is a sub-score), the examiner attributes points according to the type of recall (see table below). The use of cues provides clinical information on the nature of the memory deficits. For memory deficits due to retrieval failures, performance can be improved with a cue. For memory deficits due to encoding failures, performance does not improve with a cue.

MIS scoring				**Total**
Number of words recalled spontaneously	…	multiplied by	3	…
Number of words recalled with a category cue	…	multiplied by	2	…
Number of words recalled with a multiple choice cue	…	multiplied by	1	…
	Total MIS (add all points)			**---/15**

11. Orientation:

Administration: The examiner gives the following instructions: "*Tell me today's date.*" If the subject does not give a complete answer, the examiner prompts accordingly by saying: *"Tell me the [year, month, exact date, and day of the week]."* Then the examiner says: *"Now, tell me the name of this place, and which city it is in."*

Scoring: One point is allocated for each item correctly answered. The date and place (name of hospital, clinic, office) must be exact. No points are allocated if the subject makes an error of one day for the day and date.

TOTAL SCORE: Sum all subscores listed on the right-hand side. Add one point for subject who has 12 years or fewer of formal education, for a possible maximum of 30 points. A final total score of 26 and above is considered normal.

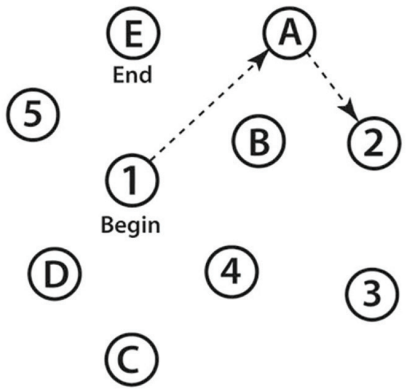
Please refer to the MoCA website at www.mocatest.org for more information on the MoCA.

MONTREAL COGNITIVE ASSESSMENT (MOCA®)

Version 8.1 English

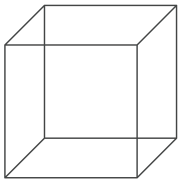
Name:
Education: Date of birth:
Sex: DATE:

VISUOSPATIAL / EXECUTIVE



[ ] [ ]

Copy cube

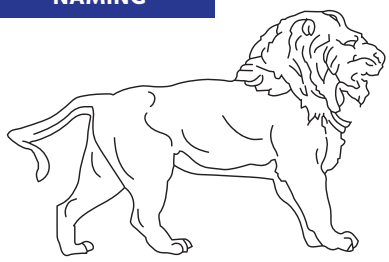


Draw CLOCK (Ten past eleven)
(3 points)

[ ] Contour [ ] Numbers [ ] Hands

POINTS __/5

NAMING



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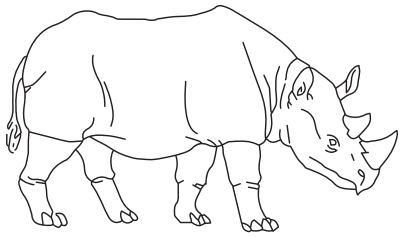

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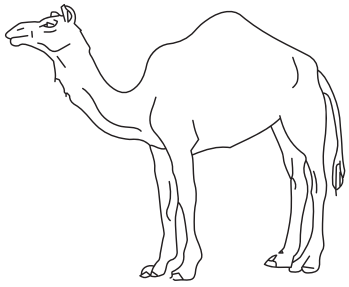


[ ]

__/3

MEMORY

Read list of words, subject must repeat them. Do 2 trials, even if 1st trial is successful. Do a recall after 5 minutes.

	FACE	VELVET	CHURCH	DAISY	RED
1ST TRIAL					
2ND TRIAL					

NO POINTS

ATTENTION

Read list of digits (1 digit/ sec.).

Subject has to repeat them in the forward order. [ ] 2 1 8 5 4

Subject has to repeat them in the backward order. [ ] 7 4 2

__/2

Read list of letters. The subject must tap with his hand at each letter A. No points if ≥ 2 errors

[ ] F B A C M N A A J K L B A F A K D E A A A J A M O F A A B

__/1

Serial 7 subtraction starting at 100. [ ] 93 [ ] 86 [ ] 79 [ ] 72 [ ] 65

4 or 5 correct subtractions: **3 pts**, 2 or 3 correct: **2 pts**, 1 correct: **1 pt**, 0 correct: **0**

__/3

LANGUAGE

Repeat: I only know that John is the one to help today. [ ]

The cat always hid under the couch when dogs were in the room. [ ]

__/2

Fluency: Name maximum number of words in one minute that begin with the letter F. [ ] _____ (N ≥ 11 words)

__/1

ABSTRACTION

Similarity between e.g. banana - orange = fruit [ ] train - bicycle [ ] watch - ruler

__/2

DELAYED RECALL

Memory Index Score (MIS)

(MIS)	Has to recall words WITH NO CUE	FACE [ ]	VELVET [ ]	CHURCH [ ]	DAISY [ ]	RED [ ]	Points for UNCUED recall only
X3							
X2	Category cue						MIS = ____ /15
X1	Multiple choice cue						

__/5

ORIENTATION

[ ] Date [ ] Month [ ] Year [ ] Day [ ] Place [ ] City

__/6

www.mocatest.org

Administered by: _____

Training and Certification are required to ensure accuracy

MIS: /15
(Normal ≥ 26/30)
Add 1 point if ≤ 12 yr edu

TOTAL __/30

Adaptive Equipment to Compensate for Impairments in Motor Performance

Category I: "Gadgets" that may assist mobility, comfort in the vehicle, or visibility

- The adaptive devices in this category are available via websites, catalogs, or in stores carrying automotive devices.
- To be in this category they do not directly interfere or alter the control of a moving vehicle.
- Items in this category do not require a Comprehensive Driving Evaluation and/or a prescription from a driving rehabilitation specialist.

A. Handybar® (transfers, driver or passengers)

1. Much like an arm on an armchair, this tool can be helpful for drivers, passengers and caregivers. It may reduce the work/stress on the person assisting with ingress/egress from a vehicle.
2. Precautions/concerns/limitation:
    a. There are several manufacturers and styles. The "blade" style may be too wide to fit in some vehicle models.
    b. Some advertise the additional utility to break windows and cut the seatbelt if necessary.
    c. The device cannot be left in place; therefore it requires a convenient (in reach) and safe location for storage.

B. Ribbon or seatbelt Easy Reach Handle® (reach the seatbelt)

1. An option when reaching for the seatbelt is painful or difficult (particularly if this is a reason the seatbelt is not worn).
2. A piece of ribbon may be sufficient or they can purchase a gadget such as the "easy reach" adaptive device that attaches to the seatbelt.
3. Precautions/concerns/limitations:
    a. Warn that any device must not interfere with the seatbelt in any manner. Closely note the placement and avoid any possible interference with the seatbelts function to freely retract and feed.

C. Plastic garbage bag or seat slide (transfers)

1. A plastic garbage bag is an inexpensive assist to sliding into place. (Commercially available products such as the seat slide are also available).
2. This can also be useful as a caregiver resource.
3. Precautions/concerns/limitations**:**
    a. Once in the seat the bag creates a slippery surface. Recommend that it be removed when vehicle is in motion.

D. Leg lifter (transfers, pivot into the seat)

1. A loop is placed over foot to assist in "lifting the leg" into the vehicle.
2. Manually show how to assist pulling the leg into the vehicle by pulling on pant leg or lifting thigh.

Created by Elin Schold Davis,
AOTA Older Driver Initiative Coordinator escholddavis@aota.org

E. Key holder (decrease pain/trauma with turning key)

1. Generally inexpensive and available in various styles and designs.
2. Precautions/concerns/limitations:
    a. Consider placement of ignition to be sure the key holder does not interfere.

Category II: Devices readily available but may interfere with vehicle safety devices.

- Consumers need to be well informed of the pros and cons when choosing to use devices in this category.
- There are no current "guidelines." Referral to an occupational therapist or driving rehabilitation specialist may be justified for offering guidance in this purchase.

A. Wedge cushion (seat height to raise line of sight, check impact on reach to pedals)

1. Variables include the quality of foam (firm, stable) and shape. Determining the benefit of the shape, wedge or block style cushion, will depend on the person's needs and the contours of the vehicle seat.
2. Precautions/concerns/limitations: Any cushion may impact the ability to reach the pedals. Cushion material should be as firm as possible. Material that easily flattens may contribute to "submarining" under the lap belt in the event of a crash.

B. Mirrors (additional side, rearview and panoramic options)

1. Many versions of clip on and stick on mirrors are available to expand the peripheral field of view for the driver. Some drivers report that they are effective while others may report that they distort or distract.
2. Precautions/concerns/limitations: a mirror clipped to the rearview mirror may break off and become a projectile in a crash.

C. Pedal Extenders (built up pedals for short statured drivers)

1. Many versions. Professional installation important for proper placement and secure attachment.
2. Lack of consensus if this equipment should require a driving evaluation and prescription.

Category III: Adaptive Equipment requiring evaluation, prescription and professional installation

- Explore a full array of equipment options at The National Mobility Equipment Dealer's Association www.nmeda.com.
- The Comprehensive Driving Evaluation report will generate individualized recommendations and equipment prescriptions. This evaluation should be neutral to vendor and equipment brands.
- Adaptive equipment does interfere with the Original Equipment Manufacturer (OEM) and must be properly installed, inspected, and the driver trained in its use. (NMEDA QAP)
- Many states require testing by the licensing authority and may place a restriction on the driver's license.

A. Steering Knob (drive with one hand/arm)

1. Evaluation determines need and ideal placement of device on the steering wheel.
2. Some states require this adaptation for one-handed drivers.

B. Left Foot Accelerator (manage gas with left foot when right foot unable/unreliable)

1. Requires comprehensive driving evaluation, professional installation and training.
2. Requires significant new learning, evaluation of cognition is essential.
3. Controversial. Some programs no longer install, yet many have used very successfully.

C. Hand Controls (control gas and brake with hands, nonfunctioning or unreliable lower extremities)

1. Requires comprehensive driving evaluation, professional installation and training.
2. Requires new learning, evaluation of cognition is essential.
3. Many models and configurations are available. Specialist will consider the driver's strongest abilities and the access (space) available in the driver's vehicle when recommending hand control model(s).

D. A wide range of specialized devices are available for primary (low effort steering, smaller circumference steering wheel) and secondary controls (blinker, wipers, etc.). Drivers experiencing pain, impaired reach, or diminished strength may benefit from modifications that bring control of the vehicle within their physical capabilities.

1. The Comprehensive Driving Evaluation will generate individualized recommendations and equipment prescriptions. The evaluation should be neutral to vendor and equipment brands.
2. Adaptive equipment does interfere with the Original Equipment Manufacturer (OEM) and must be properly installed, inspected, and the driver trained in its use. (NMEDA QAP)
3. Many states require testing and place a restriction on the driver's license
4. Equipment and installation is costly. Refer to the driving evaluator with medical background, typically an occupational therapy practitioner, with professional training to understand the driver's medical condition and its progression.

Category IV: Vehicle Modification requiring evaluation, prescription and professional installation

- The Comprehensive Driving Evaluation is likely required to prescribe the complex components of vehicle modification. This evaluation should be neutral to vendor and equipment brands.
- Modification clearly interferes with the OEM design and should only be completed by certified vehicle modifiers. See www.NMEDA.com.
- Many states require testing by the driver licensing authority and may place a restriction on the driver's license for driver of a modified vehicle.
- Caregiver needs must be considered when discharging a senior with medical conditions that impact mobility, ability to transfer into vehicle, etc.

- Equipment and installation is costly. Refer to the driving evaluator with medical background, typically an occupational therapy practitioner, with professional training to understand the driver's medical condition and its progression.

A. Vehicle adaption may include wider doors, lowered floor for wheelchair access, or a proper securement system if driving from the wheelchair. Modifications to the vehicle can allow the driver to transfer and stow equipment.

B. Vehicle adaptation may consider both the needs of the client and caregiver. When the senior is now a passenger only, the caregivers may benefit from an adapted vehicle that supports successful transfers and transport of their passenger's mobility equipment. Equipment may ease the physical burden on the caregiver.

C. Transporting mobility equipment such as wheelchairs and scooters may be difficult. Some vehicles lack the space and access. Some scooter designs fold and lift easier than others. Some trailer style carriers may be too heavy for the vehicle, potentially interfering with vehicle function and control.

Resources

Many of these items are available on Amazon, Walmart, CVS, etc.
Websites are offered here as examples, but are not to be considered as a recommendation.

1. **Handybar (transfers, driver or passengers)**
   - Search: Handybar car transfer
   - Handybar is the original developer's brand. The metal tip is slim and fits most vehicles. Watch for blades or other designs that may not fit the majority of vehicles.
     https://stander.com/product/3001-handybar/

2. **Ribbon or seatbelt Easy Reach Handle (reach the seatbelt)**
   - Search: Seat Belt Pull or Grabber
   - https://www.arthritissupplies.com/easy-reach-seat-belt-handle.html

3. **Wedge cushion (seat height)**
   - https://www.amazon.com/As-Seen-Solution-Orthopedic-Cushion/dp/B00H5VRCEE
   - Purchase at several home goods stores
   - Prices vary due to style, coverings, foam density and quality. Recommend dense foam understanding it is likely more costly.

4. **Mirrors (instructions re: "how to adjust" is adequate)**
   - https://www.autoguide.com/the-10-best-blind-spot-mirrors-and-why-you-need-them
   - Use your professional judgment if choosing to include sample mirrors in your CarFit demonstration kit. Some are concerned that interior mirrors could break loose in a crash. Proper installation and training in their use is essential to optimally benefit from ancillary mirrors.

5. **Garbage bag or seat slide (transfers)**
   - Car Seat Slide https://abledata.acl.gov/product/car-seat-slide
   - Garbage bags or silky scarves offer a temporary solution such as following hip surgery.

6. **Leg lifter (transfers)**
   - https://liveoakmed.com/products/rigid-leg-lifter
   - Select version with stiff loop at one end for ease in placing over foot.

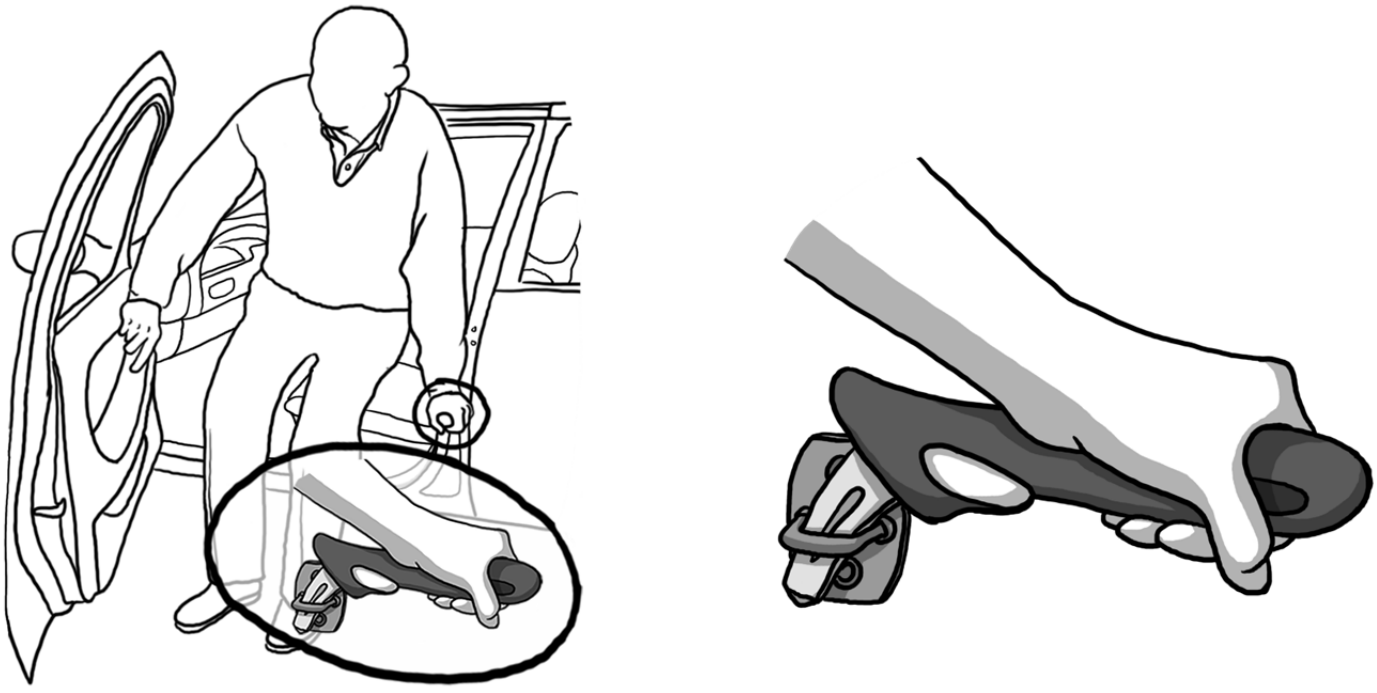
7. **Adjustable (built up) Key holder (decrease pain/trauma with turning key)**
   - Several style choices are available at https://www.performancehealth.com/hole-in-one-key-holder

Created by Elin Schold Davis,
AOTA Older Driver Initiative Coordinator escholddavis@aota.org

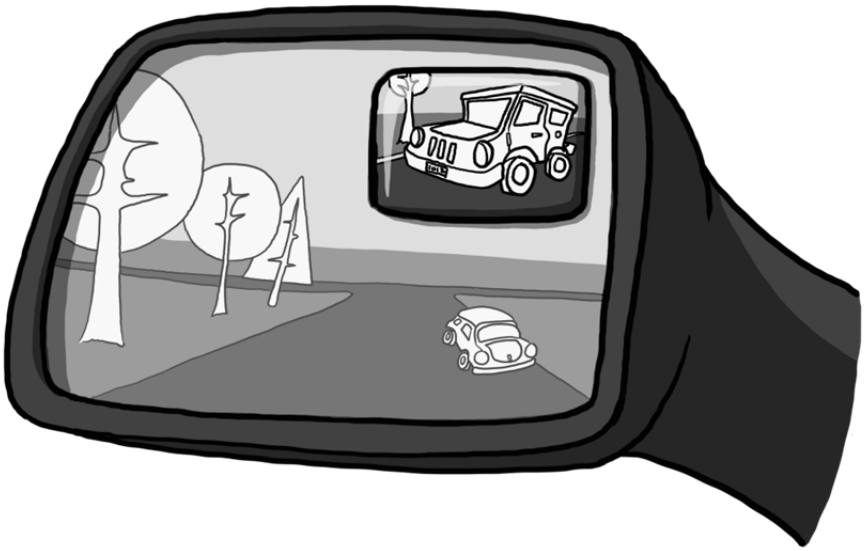
Leg Lifter

Key Holder

Easy Reach



Handy Bar



Button Mirror

Pedal Extender

Left Foot Accelerator

Steering Knob

National Highway Traffic Safety Administration

Adapting Motor Vehicles for Older Drivers

NHTSA
www.nhtsa.gov

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Introduction

A Proven Process for Maintaining Freedom on the Road

New and existing adaptive technologies continue to broaden opportunities for older drivers to drive comfortably and safely — and enjoy the freedom of driving for as long as possible. Some of these adaptive technologies are as simple as swivel seats for more convenient access. Others, such as hand controls, may be necessary for a driver to safely operate a vehicle. All drivers who are facing, or may soon face, age-related driving challenges should become familiar with the technologies available to support any special driving needs.

The information in this brochure is based on the experience of driver rehabilitation specialists and other professionals who work with people who require adaptive devices for their motor vehicles. The steps outlined here represent a proven process — **evaluating your needs, making sure the vehicle "fits" you properly, choosing appropriate features, installing and knowing how to use adaptive devices, practicing good vehicle maintenance** — that can help you avoid costly mistakes when modifying or purchasing a vehicle to accommodate age-related changes that may affect your driving.

Also included is general information on cost savings, licensing requirements, and organizations to contact for additional assistance. Although the brochure focuses on drivers of modified vehicles, each section also contains important information for people who provide transportation for passengers with special needs.

Investigate Cost-Saving Opportunities and Licensing Requirements

Cost-Saving Opportunities

With such a wide range of adaptive equipment solutions available, associated costs for modifying a vehicle can vary greatly depending on an individual's needs. Some adaptive equipment, such as a special seat-back cushion, can provide a better view of the road for as little as $50. More complex equipment, such as hand controls, can be purchased for under $1,000. However, a new vehicle modified with adaptive equipment will cost anywhere from $20,000 to $80,000.

Whether you are modifying a vehicle you now own or purchasing a new vehicle with adaptive equipment, it pays to do your homework first. By consulting with a driver rehabilitation specialist before you buy, you can learn what adaptive equipment you need now or may need in the future, avoid paying for equipment you don't need, and learn about opportunities for public and private financial assistance.

There are programs that may help pay part or all of the cost of vehicle modification. For information, contact your State's Department of Vocational Rehabilitation or another agency that provides vocational services, and, if appropriate, the U.S. Department of Veterans Affairs. You can find phone numbers for these State and Federal agencies in your local phone book.

Also be aware of the following:

- Some nonprofits that advocate for individuals with disabilities offer programs that may help pay for adaptive devices. Generally, these groups and programs represent local resources. To learn about any available programs in your area, contact your State government office that handles services for persons with disabilities.
- Automotive insurance may cover all or part of the cost of adaptive equipment if your need for such equipment is a result of a motor vehicle crash.
- Workers' compensation typically covers the cost of adaptive equipment if your need for such equipment is a result of a job-related injury.

- Most major vehicle manufacturers offer rebates on adaptive equipment, usually up to $1,000, provided you purchase a vehicle less than one year old. Your local automobile dealer can supply information on these programs and assist you with the application process. Contact information for vehicle manufacturers offering rebates on adaptive equipment is listed in the "Resources" section of this brochure.
- National Mobility Equipment Dealers Association (NMEDA) members are also familiar with vehicle manufacturer rebates, can help you apply for these rebates — and can provide pre-purchase advice about the type of vehicle that will accommodate your adaptive equipment needs. NMEDA contact information is listed in the “Resources” section of this brochure.
- Some States waive the sales tax for adaptive devices if you have a doctor’s prescription for their use.
- The cost of adaptive equipment may be tax deductible. Check with a qualified tax consultant to learn more.

Licensing Requirements

All States require a valid learner’s permit or driver’s license to receive an on–the–road driving evaluation. You cannot be denied the opportunity to apply for a permit or license because of age or disability. However, a driver’s license with restrictions may be issued based on your need of adaptive equipment.

Evaluate Your Needs

Driver rehabilitation specialists perform comprehensive evaluations to identify the adaptive equipment most suited to your needs and medical condition. As part of this process, a rehabilitation specialist will take into consideration your future equipment needs based on your medical condition and the repetitive stress an adaptive aid may place on a particular muscle group.

In addition, you can expect a complete evaluation to include vision screening as well as:

- Muscle strength, flexibility, and range of motion;
- Coordination and reaction time;
- Judgment and decision-making abilities; and
- Ability to drive with adaptive equipment.

After you finish the evaluation you should receive a report containing specific recommendations on driving requirements or restrictions. You should also be given a complete list of any recommended vehicle requirements or modifications. The recommendations should suggest obtaining on-the-road training to practice safe operation of the equipment and learn safe driving habits.

Finding a Qualified Driver Rehabilitation Specialist

Check with a rehabilitation center in your area to find a qualified driver rehabilitation specialist to perform your evaluation. You'll find rehabilitation centers for each State listed on the Web sites for the Association for Driver Rehabilitation Specialists (ADED) and the American Occupational Therapy Association, Inc. (AOTA). These associations maintain lists of qualified driver rehabilitation specialists in areas across the United States and Canada. Contact information for these groups is located in the "Resources" section of this brochure.

Paying for an Evaluation

- Vocational rehabilitation agencies and workers' compensation agencies may assist in the cost of a driver evaluation.
- Your health insurance company may pay for part or all of the evaluation. Find out from your insurance company if you need a doctor's prescription or other documentation to receive such benefits.
- Many driver evaluation programs offer senior drivers a discount on evaluations. Ask if your driver rehabilitation specialist offers a discount to seniors.

Determining the Best Time to Seek a Driving Evaluation

Consult with your doctor to make sure you are physically and psychologically prepared to drive. Being evaluated too soon after an injury, stroke, or other trauma may be misleading because it may show the need for adaptive equipment that you will not need in the future. You want to be functioning at your best when you have a driver evaluation. For the evaluation, you will need to take any equipment you normally use, such as a walker or neck brace. If you use a wheelchair and are planning to modify the wheelchair or obtain a new one, be sure to tell your driver rehabilitation specialist prior to the evaluation.

Evaluating Passengers with Disabilities

Driver rehabilitation specialists may also give advice on compatibility and transportation safety issues for passengers with special needs. They determine the type of seating needed and the person's ability to enter and exit the vehicle. They provide advice on the purchase of modified vehicles and recommend appropriate wheelchair lifts or other equipment that would work in your vehicle.

Select the Right Vehicle

Although the purchase or lease of a vehicle is your responsibility, your mobility equipment dealer and driver rehabilitation specialist are qualified to ensure the vehicle you select can be modified to meet your adaptive equipment needs. Take the time to consult with these professionals before you make your purchase decision.

To find a qualified dealer in your area, contact the National Mobility Equipment Dealers Association (NMEDA). To find a qualified driver rehabilitation specialist, contact the Association for Driver Rehabilitation Specialists (ADED). Complete contact information for these two organizations is listed in the "Resources" section of this brochure.

The following questions can help with vehicle selection. They can also help determine if you can modify a vehicle you already own:

- Does the vehicle have the cargo capacity (in pounds) to accommodate the equipment you require?
- Will there be enough space and cargo capacity to accommodate your family or other passengers once the vehicle is modified?
- Is there adequate parking space at home and at work for the vehicle and for loading/unloading a wheelchair?
- Is there adequate parking space to maneuver if you use a walker?
- What additional options are necessary for the safe operation of the vehicle?

If a third party is paying for the vehicle, adaptive devices, or modification costs, find out if there are any limitations or restrictions on what is covered. Always get a written statement on what a funding agency will pay before making your purchase.

Once you select and purchase a vehicle, be aware that you will need to also purchase insurance to cover your vehicle while it's being modified — even though it will be off the road during this period.

Standard Features to Look for in a New Passenger Vehicle

Before purchasing a new vehicle, always sit in it first to make sure you are comfortable. Check to see that you can enter and exit the vehicle with ease. If possible, take it out for a test drive. How well does the car fit your body? To prevent air bag-related injury, you should keep 10 inches between your breast bone and the steering wheel, which contains

the driver's side air bag. At the same time, you'll need to be able to easily reach the pedals while maintaining a comfortable line of sight above the adjusted steering wheel. Also, make sure the vehicle provides you with good visibility in all directions — front, rear, and sides. Your dealer can demonstrate the use of adaptive features, such as adjustable foot pedals and driver seats, which can help ensure a good person-vehicle fit.

Check to see if the model you are considering purchasing has good crash test results and is resistant to rollover. Visit **www.safercar.gov** or call the Vehicle Safety Hotline at **888-327-4236** to obtain government crash test results and rollover ratings for specific makes and models.

When selecting a vehicle, look for and ask about available features designed to improve both the comfort and safety of drivers experiencing physical or visual challenges associated with aging. Some of these features are:

- High or extra-wide doors;
- Adjustable foot pedals;
- Large interior door handles;
- Oversized knobs with clearly visible labels;
- Support handles to assist with entry and exit;
- Large or adjustable-size print for dashboard gauges;
- Seat adjusters that can move the seat in all directions — particularly raising it so the driver's line of sight is 3" above the *adjusted* steering wheel; and
- Dashboard-mounted ignition rather than steering column-mounted ignition.

Choose a Qualified Mobility Dealer to Modify Your Vehicle

Even a half inch change in the lowering of a van floor can affect a driver's ability to use equipment or to have an unobstructed view of the road. So it's important that you take the time to find a qualified dealer to modify your vehicle. Your driver rehabilitation specialist may be able to provide referrals depending on where you live and your vehicle modification and adaptive equipment needs.

Note: Some State agencies specify the dealer you must use if you want reimbursement. For example, some States require that dealers bidding on State vocational rehabilitation jobs be members of the National Mobility Equipment Dealer's (NMEDA's) Quality Assurance Program. You'll find contact information for NMEDA within the "Resources" section of this brochure.

To find qualified mobility equipment dealers, begin with phone inquiries to learn about credentials, experience, and references. Ask questions about how they operate. Do they work with qualified driver rehabilitation specialists? Will they look at your vehicle before you buy it? Do they require a prescription from a physician or driver evaluation specialist? How long will it take before they can start work on your vehicle?

Also ensure that the dealer you choose to modify your vehicle is registered with the National Highway Traffic Safety Administration (NHTSA). In order to adapt a vehicle to meet your needs, registered equipment dealers are permitted to modify existing federally mandated safety equipment. In addition, registered mobility equipment dealers must provide you with a written statement regarding the work that was performed, as well as list any Federal Motor Vehicle Safety Standards affected by their modification work on a label adjacent to the original equipment manufacturer's label or the modifier's certification label. These labels are often found inside the driver's door. Visit **www.nhtsa.dot.gov/cars/rules/adaptive/Modifier/Index.cfm** to find out if a mobility equipment dealer is registered with NHTSA as a vehicle modifier.

Questions to consider in evaluating a mobility equipment dealer's qualifications are listed below:

- Is the dealer registered with NHTSA?
- Is the dealer a member of NMEDA — and a participant in this organization's **Quality Assurance Program**?
- What type of training has the staff received?

- What type of warranty is provided on work?
- Does the dealer provide ongoing service and maintenance?
- Are replacement parts stocked and readily available?

If you are satisfied with the answers you receive, check references; then arrange to visit the dealer's facility. Once you are comfortable with a dealer's qualifications, you will want to ask more specific questions, such as:

- How much will the modification cost?
- Are third-party payments accepted?
- How long will it take to modify the vehicle?
- Can the equipment be transferred to a new vehicle in the future?
- Will existing safety features need to be modified to install the adaptive equipment?

While your vehicle is being modified, you will most likely need to be available for fittings. This avoids additional waiting time for adjustments once the equipment is fully installed. Without proper fittings you may have problems with the safe operation of the vehicle and have to go back for adjustments.

Obtain Training on the Use of New Equipment

Both new and experienced drivers need training on how to safely use newly installed adaptive equipment. Your equipment installer and driver rehabilitation specialist should provide information on the new devices and off-road instruction.

But literature and off-road instruction aren't enough to equip you to drive safely with your new adaptive equipment. This equipment can be very complex. So it's extremely important to obtain on-the-road training and practice with a driver rehabilitation specialist who has advanced expertise and knowledge of adaptive technologies. If your driver rehabilitation specialist does not offer such training, ask him or her for a referral, or inquire at your local driver licensing office.

State vocational rehabilitation departments and workers' compensation plans will pay for driver education and training under certain circumstances. At a minimum, their staffs can help you locate a qualified driver rehabilitation specialist to provide training.

Finally, remember to enlist the help of a family member or friend to drive you to all of your training sessions. (It's important to have someone else who can drive your vehicle in case of an emergency.)

Ensuring Safe Operation and Warranty Compliance

Regular maintenance is important for keeping your vehicle and specially installed adaptive features safe and reliable. It may also be mandatory for compliance with the terms of your warranty. Some warranties specify a time period during which adaptive equipment must be inspected. These equipment check-up schedules may differ from those for your vehicle. Make sure you or your modifier submit all warranty cards for all equipment. This will not only ensure coverage, but will also enable manufacturers to contact you in case of a recall.

Vehicle Safety Checklist

Your vehicle warranty and owner's manual will describe regularly required vehicle maintenance. Keep in mind that your adaptive equipment may need special attention or more frequent check-ups than your vehicle alone. However, the following checklist represents basic maintenance that applies to all vehicles:

- Check tire pressure at least once a month and always before a long road trip.
- Change oil as recommended by your owner's manual, using the grade recommended.
- Check all fluids when you change the oil, including power steering fluid, brake fluid, and engine coolant.
- Routinely check headlights, brake and parking lights, reverse lights, and turn signals.
- Remember to keep your windows and headlights clean. You need to clearly see where you are going. Keeping the headlights clean will help other cars see you too.
- Check for damage from road hazards by having your vehicle put on a service lift at least once a year.

Proper maintenance can keep your vehicle running smoothly, leaving you free to concentrate on the road and enjoy the freedom of driving.

Resources

Association for Driver Rehabilitation Specialists (ADED)
200 First Avenue NW, #505
Hickory, NC 28601
866-672-9466
www.aded.net

American Occupational Therapy Association (AOTA)
4720 Montgomery Lane
P.O. Box 31220
Bethesda, MD 20824-1220
301-652-2682
TDD: 800-377-8555
www.aota.org/olderdriver

National Mobility Equipment Dealers Association (NMEDA)
3327 West Bearss Avenue
Tampa, FL 33618
800-833-0427
www.nmeda.org

National Highway Traffic Safety Administration (NHTSA)
1200 New Jersey Avenue SE.
Washington, DC 20590
888-327-4236
TDD: 800-424-9153
www.nhtsa.gov
www.safercar.gov

Department of Veteran Affairs
800-827-1000
www.va.gov

State Departments of Vocational Rehabilitation
Listed in telephone book.

The following manufacturers offer rebates or reimbursements on new-vehicle modification.

Audi
800-822-2834
www.audiusa.com

DaimlerChrysler Corporation
800-255-9877
(TDD Users: 800-922-3826)
www.daimlerchrysler.com

Ford Motor Company
800-952-2248
(TDD Users: 800-TDD-0312)
www.fordmobilitymotoring.com

General Motors Corporation
800-323-9935
(TDD Users: 800-TDD-9935)
www.gm.com

Saturn
800-553-6000, Prompt 3
(TDD Users: 800-833-6000)
www.saturn.com

Toyota
800-331-4331
www.toyota.com/mobility

Volkswagen
800-822-8987
www.vw.com

Selected photos courtesy of Bruno Independent Living Aids.

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February 2007

U.S. Department
of Transportation
**National Highway
Traffic Safety
Administration**

Sample Driving Cessation Plan

Planning for future driving cessation requires research and planning similar to future needs for finances and housing. Ideally, creating a driving cessation plan starts early, years before driving needs to stop. Having individual choice and control over transportation options means knowing what options are available and how to use them.

One concept many older adults find helpful is “transition”. This involves gaining experience and confidence in the use of several forms of transportation options available in the community. This planning may also involve exploring requirements for eligibility, availability, routes, and accessibility.

When driving needs to stop for medically-related changes, transportation options may need to include support to allow an individual to move from one destination to another safely. The growing field of Mobility Management may be an option available in your community. Mobility Managers assist individuals and their families with creating transportation plans with appropriate supports for safety and comfort. An example of support may be a service offering door to door service or the provision of an escort who comes to the older adult’s door, to and from the vehicle and stays with them at their destination until returning safely back into their home.

Sample Driving Cessation Plan for _____:

1) You are experiencing medically related changes that may require you to stop driving at some point in the future. Your physician or healthcare professional will assist you in monitoring these changes and will do everything possible to extend your driving as long as safely possible.

2) We recommend that you make a list of the typical places you go. This list will guide you in your exploration of options other than driving that can support ongoing participation in the activities you choose.

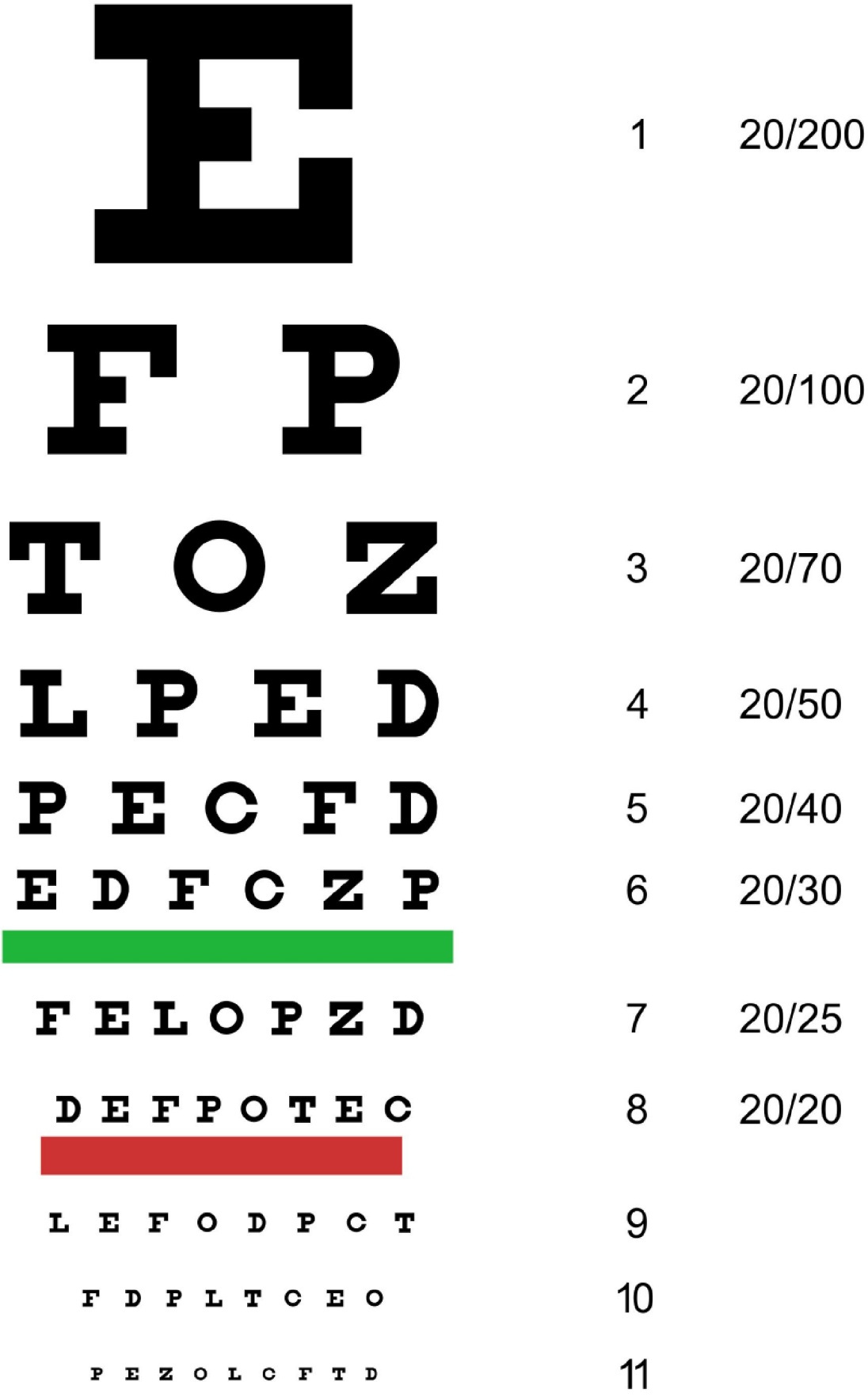
Where do I want to go?	How many miles away is it from home?	How often do I want to go?	Who might be able to provide me with a ride? (family, friends, neighbors, etc.)	Can I walk there? Y/N	Can I take public transportation? Y/N	What other services are available for getting there? (paratransit, taxi, volunteer drivers, etc.)
Grocery store						
Bank						
Post office						
Senior center						
Exercise/physical activity center						
Outdoor park						
Library						

Doctor's office						
Dental office						
Personal care						
General shopping						
Entertainment venue						
Club activities						
Volunteer service locations						

Resources:

U.S. Administration on Aging Eldercare Locator. Available at https://eldercare.acl.gov. Accessed September 12, 2018.

Snellen Test



In order to perform this test, please follow the instructions:

Snellen Test

1. Print the test page in A4 standard format. Place yourself 2.8 meters (or 9 feet) away from the chart. If the test page is in another format, or if you wish to perform the test facing the screen, you will have to calculate the distance at which you must stand facing it, using the following formula: measure the height of the letter E (first line, 20/200) in millimeters. Then, divide the value of this measurement by 88. Finally, multiply it by 6. The result shows the distance at which you must be placed, in meters.
   E.g. (42/88) x 6 = 2.8 m

2. Test your visual acuity with correction (contact lenses or glasses).

3. Test one eye at a time. Start with the right eye, covering the left one without pressing on it. Then, examine the left eye by doing the opposite. If you are using correction glasses, you can cover the eye with a sheet of paper.

4. Read the letters from the largest to the smallest.

5. To make the examination easier and faster, another person can help you by showing the letters you must read among the lines of letters.

6. If you can read the letters of the 8^{th} line, your sight is optimal (visual acuity 20/20).

7. If your visual acuity is less than 20/20 or if you have doubts about your sight, visit your ophthalmologist.

NOTE: take the results as a recommendation. The results do not indicate a diagnosis whatsoever. Performing the test does not mean you should skip regular visits to your eye doctor, because you could easily miss signs that only a trained eye care practitioner would find.

Snellgrove Maze Test

Administration Instructions

The Maze Test was developed as a pencil and paper test of attention, visuoconstructional ability, and executive functions of planning and foresight. Participants complete a simple demonstration (or practice) maze first to establish the rule set, and then complete the Maze Task. Performance is measured in time (in seconds), using a timer or stopwatch, and the total number of errors. Errors are determined by the number of times a participant enters a dead end or fails to stay in the lines. Time to administer is 1–4 minutes. The Maze should be printed on an 8 × 11" paper with the Maze Test at least 5.5" square and the practice 4.5".

To administer the test, the ***Practice maze*** is placed in front of the participant in the correct orientation. The participant is provided with a pen, and the administrator says:

"I want you to find the route from the start to the exit of the maze. Put your pen here at the start (point to the start). Here is the exit of the maze (point to the exit). Draw a line representing the route from the start to the exit of the maze. The rules are that you are not to run into dead ends (point to a dead end) or cross solid lines (point to a solid line). Go."

The instructions are repeated, if required, and any rule-breaks should be corrected. The participant is permitted to lift the pen from the page. When the participant has attempted the maze, record whether the task was completed (yes or no), and the number of times the participant required repeating or reminding of the instructions.

Next the ***actual Maze Task*** is placed in front of the participant in the correct orientation. The participant is provided with a pen, and the administrator says:

"*Good, now that I know you understand the task, I'm going to time you as you find the route from the start to the exit of the maze. Put your pen here at the start (point to the start). Here is the exit (point to the exit). Draw a line representing the route from the start to the exit of the maze. The same rules apply. Don't run into any dead ends (point to a dead end), or cross any lines (point to a solid line). Are you ready? I'm starting the timer now. Go!"*

The instructions are not repeated and any rule breaks are not corrected. If questions are asked, the response should be: *I can't give you any more help. Do the task as best you can*. Stop the timer immediately upon the participant's completion of the task. There is a limit of 3 minutes for the Maze Task. If the maze has not been completed in this time, discontinue. The recording of the test includes whether the Maze Task was completed (yes or no); the time in seconds to complete the Maze Task, and the number of errors (entry into a dead end, and/or failure to stay within the lane).

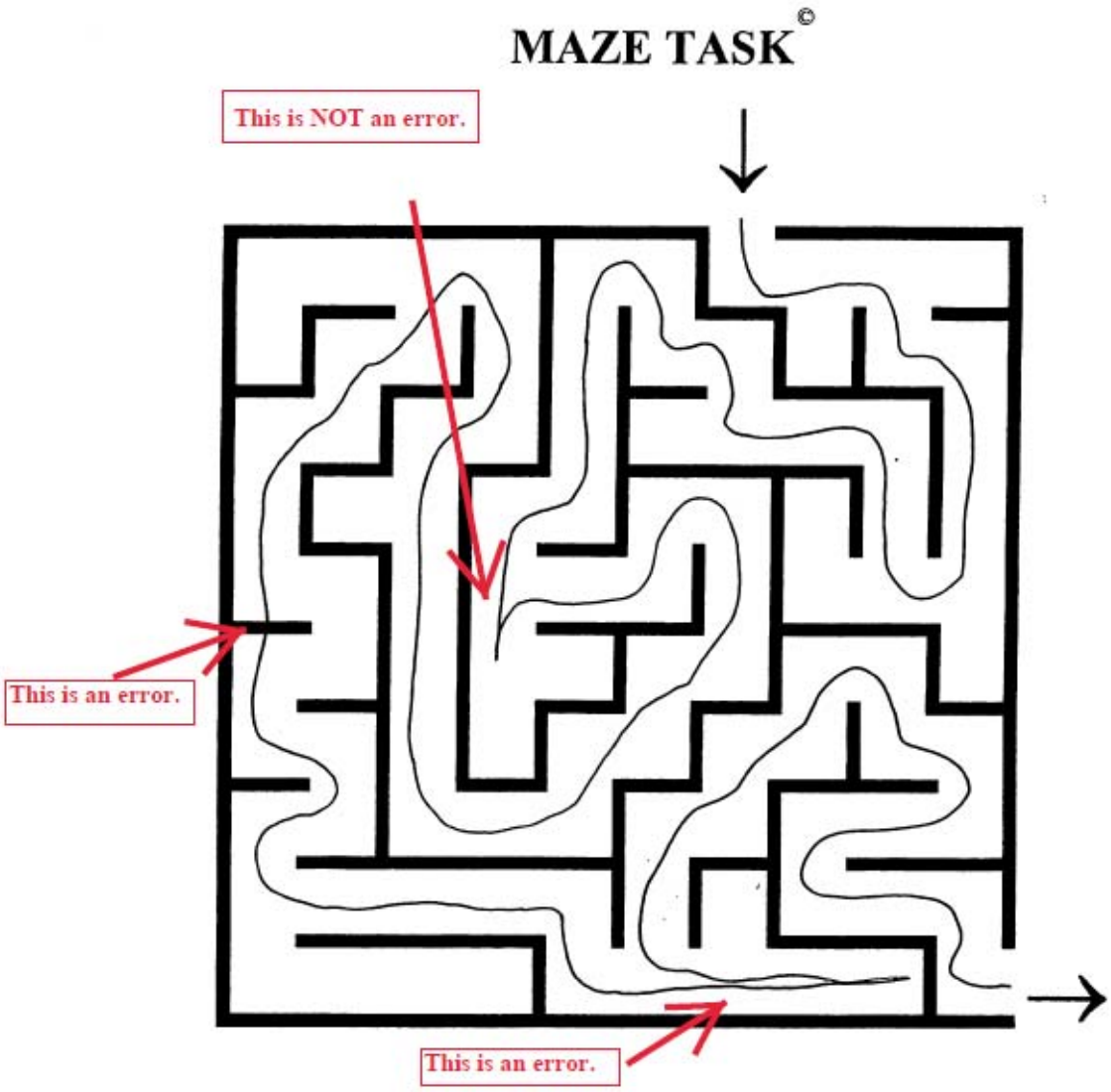
Suggested Cut-Point Scores

1. If completed in 61 seconds or longer, with or without errors, then the participant is not cognitively fit to drive safely.

2. If completed in up to 60 seconds, but with two or more errors, then the participant is not cognitively fit to drive safely.

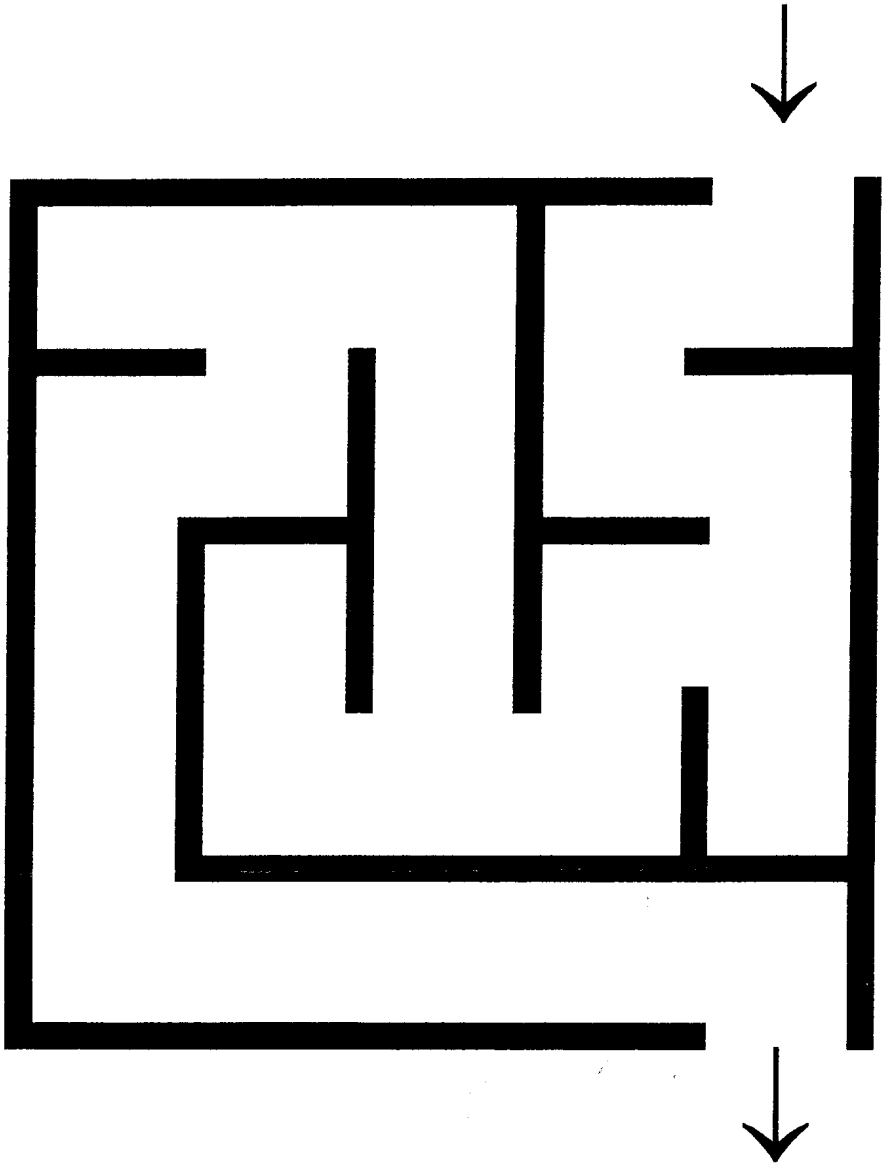
3. If completed in less than 60 seconds, with zero or one error, then the participant is likely to have adequate capacity in the cognitive domains of attention, visuoconstructional skills, and executive functions of planning and foresight to drive safely.

Illustration of Errors



Date: _____
Patient name: _____
Task completed: _____ (yes / no)
Time to complete task: _____ (seconds)
Number of errors: _____

PRACTICE MAZE ©



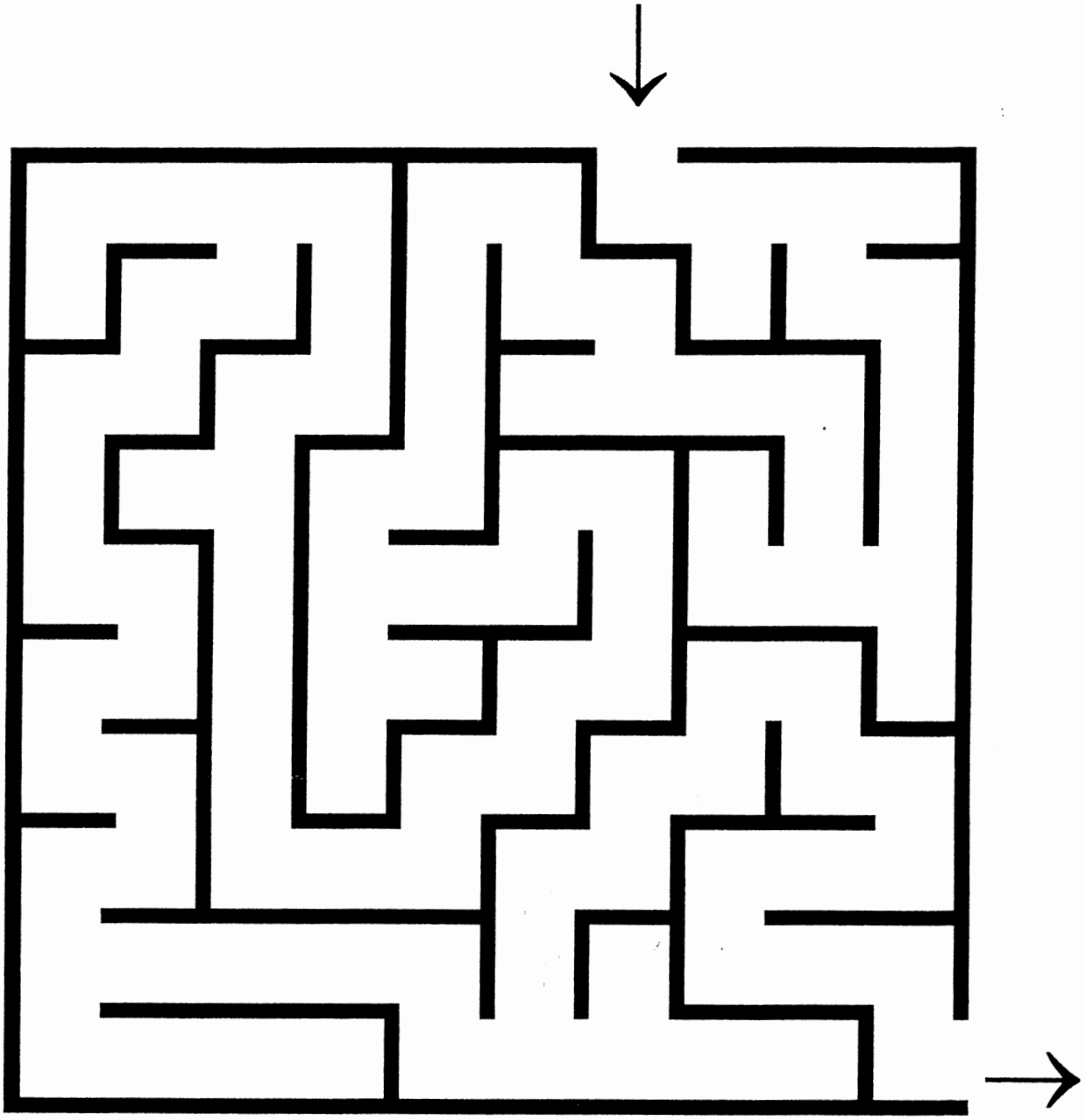
Date: _____

Patient name: _____

Task completed: _____ **(yes / no)**

Number of times patient required instructions: _____

MAZE TASK©



Date: _____

Patient name: _____

Task completed: _____ (yes / no)

Time to complete task: _____ (seconds)

Number of errors: _____

Spectrum of Driver Services: Right Services for the Right People at the Right Time

A description consumers and health care providers can use to distinguish the type of services needed for an older adult.

ADED The Association for Driver Rehabilitation Specialists

AOTA The American Occupational Therapy Association, Inc.

	COMMUNITY-BASED EDUCATION		MEDICALLY-BASED ASSESSMENT, EDUCATION AND REFERRAL		SPECIALIZED EVALUATION AND TRAINING
Program Type	**Driver Safety Programs**	**Driving School**	**Driver Screen**	**Clinical IADL Evaluation**	**Driver Rehabilitation Programs (Includes Driver Evaluation)**
Typical Providers and Credentials	Program specific credentials (e.g. AARP and AAA Driver Improvement Program).	Licensed Driving Instructor (LDI) certified by state licensing agency or Dept. of Education.	Health care professional (e.g., physician, social worker, neuropsychologist).	Occupational Therapy Practitioner (Generalist or Driver Rehabilitation Specialist#). Other health professional degree with expertise in Instrumental Activities of Daily Living (IADL).	Driver Rehabilitation Specialist#, Certified Driver Rehabilitation Specialist*, Occupational Therapist with Specialty Certification in Driving and Community Mobility+.
Required Provider's Knowledge	Program specific knowledge. Trained in course content and delivery.	Instructs novice or relocated drivers, excluding medical or aging conditions that might interfere with driving, for purposes of teaching / training / refreshing / updating driving skills.	Knowledge of relevant medical conditions, assessment, referral, and / or intervention processes. Understand the limits and value of assessment tools, including simulation, as a measurement of fitness to drive.	Knowledge of medical conditions and the implication for community mobility including driving. Assess the cognitive, visual, perceptual, behavioral and physical limitations that may impact driving performance. Knowledge of available services. Understands the limits and value of assessment tools, including simulation, as a measurement of fitness to drive.	Applies knowledge of medical conditions with implications to driving. Assesses the cognitive, visual, perceptual, behavioral and physical limitations that may impact driving performance. Integrates the clinical findings with assessment of on-road performance. Synthesizes client and caregiver needs, assists in decisions about equipment and vehicle modification options available. Coordinates multidisciplinary providers and resources, including driver education, health care team, vehicle choice and modifications, community services, funding / payers, driver licensing agencies, training and education, and caregiver support.
Typical Services Provided	1) Classroom or computer based refresher for licensed drivers: review of rules of the road, driving techniques, driving strategies, state laws, etc. 2) Enhanced self-awareness, choices, and capability to self-limit.	1) Enhance driving performance. 2) Acquire driver permit or license. 3) Counsel with family members for student driver skill development. 4) Recommend continued training and / or undergoing licensing test. 5) Remedial Programs (e.g., license reinstatement course for teens / adults, license point reduction courses).	1) Counsel on risks associated with specific conditions (e.g., medications, fractures, post-surgery). 2) Investigate driving risk associated with changes in vision, cognition, and sensory-motor function. 3) Determine actions for the at-risk driver: • Refer to IADL evaluation, driver rehabilitation program, and / or other services. • Discuss driving cessation; provide access to counseling and education for alternative transportation options. 4) Follow reporting / referral structure for licensing recommendations.	1) Evaluate and interpret risks associated with changes in vision, cognition, and sensory-motor functions due to acute or chronic conditions. 2) Facilitate remediation of deficits to advance client readiness for driver rehabilitation services. 3) Develop an individualized transportation plan considering client diagnosis and risks, family, caregiver, environmental and community options and limitations: • Discuss resources for vehicle adaptations (e.g., scooter lift). • Facilitate client training on community transportation options (e.g., mobility managers, dementia-friendly transportation). • Discuss driving cessation. For clients with poor self-awareness, collaborate with caregivers on cessation strategies. • Refer to driver rehabilitation program. 4) Document driver safety risk and recommended intervention plan to guide further action. 5) Follow professional ethics on referrals to the driver licensing authority.	Programs are distinguished by complexity of evaluations, types of equipment, vehicles, and expertise of provider. 1) Navigate driver license compliance and basic eligibility through intake of driving and medical history. 2) Evaluate and interpret risks associated with changes in vision, cognition, and sensory-motor functions in the driving context by the medically trained provider. 3) Perform a comprehensive driving evaluation (clinical and on-road). 4) Advise client and caregivers about evaluation results, and provide resources, counseling, education, and / or intervention plan. 5) Intervention may include training with compensatory strategies, skills, and vehicle adaptations or modifications for drivers and passengers. 6) Advocate for clients in access to funding resources and / or reimbursement. 7) Provide documentation about fitness to drive to the physician and / or driver-licensing agency in compliance with regulations. 8) Prescribe equipment in compliance with state regulations and collaborate with Mobility Equipment Dealer^ for fitting and training. 9) Present resources and options for continued community mobility if recommending driving cessation or transition from driving. Recommendations may include (but not restricted to): 1) drive unrestricted; 2) drive with restrictions; 3) cessation of driving pending rehabilitation or training; 4) planned re-evaluation for progressive disorders; 5) driving cessation; 6) referral to another program.
Outcome	Provides education and awareness.	Enhances skills for healthy drivers.	Indicates risk or need for follow-up for medically at-risk drivers.		Determines fitness to drive and provides rehabilitative services.

#DRS – Health professional degree with specialty training in driver evaluation and rehabilitation. *CDRS – Certified Driver Rehabilitation Specialist-Credentialed by ADED (Association for Driver Rehabilitation Specialists). +SCDCM – Specialty Certified in Driving and Community Mobility by AOTA (American Occupational Therapy Association).
^Quality Approved Provider by NMEDA (National Mobility Equipment Dealers Association).

Driver Rehabilitation Programs: Defining Program Models, Services, and Expertise.
Occupational Therapy In Health Care, 28(2):177–187, 2014

Spectrum of Driver Rehabilitation Program Services

A description consumers and health care providers can use to distinguish the services provided by driver rehabilitation programs which best fits a client's need.

ADED The Association for Driver Rehabilitation Specialists

AOTA The American Occupational Therapy Association, Inc.

Program Type	DRIVER REHABILITATION PROGRAMS Determine fitness to drive and / or provide rehabilitative services.		
Levels of Program and Typical Provider Credentials	**BASIC** Provider is a Driver Rehabilitation Specialist (DRS)# with professional background in occupational therapy, other allied health field, driver education or a professional team of CDRS or SCDCM with LDI**.	**LOW TECH** Driver Rehabilitation Specialist#, Certified Driver Rehabilitation Specialist*, Occupational Therapist with Specialty Certification in Driving and Community Mobility+, or in combination with LDI. Certification in Driver Rehabilitation is recommended as the provider for comprehensive driving evaluation and training.	**HIGH TECH** Driver Rehabilitation Specialist#, Certified Driver Rehabilitation Specialist*, Occupational Therapist with Specialty Certification in Driving and Community Mobility+. Certification in Driver Rehabilitation is recommended as the provider for comprehensive driving evaluation and training with advanced skills and expertise to complete complex client and vehicle evaluation and training.
Program Service	Offers driver evaluation, training and education. May include use of adaptive driving aids that do not affect operation of primary or secondary controls (e.g., seat cushions or additional mirrors). May include transportation planning (transition and options), cessation planning, and recommendations for clients as passengers.	Offers comprehensive driving evaluation, training and education, with or without adaptive driving aids that affect the operation of primary or secondary controls, vehicle ingress / egress, and mobility device storage / securement. May include use of adaptive driving aids such as seat cushions or additional mirrors. At the Low Tech level, adaptive equipment for primary control is typically mechanical. Secondary controls may include wireless or remote access. May include transportation planning (transition and options), cessation planning, and recommendations for clients who plan to ride as passengers only.	Offers a wide variety of adaptive equipment and vehicle options for comprehensive driving evaluation, training and education, including all services available in Low Tech and Basic programs. At this level, providers have the ability to alter positioning of primary and secondary controls based on client's need or ability level. High Tech adaptive equipment for primary and secondary controls includes devices that meet the following conditions: 1) capable of controlling vehicle functions or driving controls, and 2) consists of a programmable computerized system that interfaces / integrates with an electronic system in the vehicle.
Access to Driver's Position	Requires independent transfer into OEM^ driver's seat in vehicle.	Addresses transfers, seating and position into OEM^ driver's seat. May make recommendations for assistive devices to access driver's seat, improved positioning, wheelchair securement systems, and / or mechanical wheelchair loading devices.	Access to the vehicle typically requires ramp or lift and may require adaptation to OEM driver's seat. Access to driver position may be dependent on use of a transfer seat base, or clients may drive from their wheelchair. Provider evaluates and recommends vehicle structural modifications to accommodate products such as ramps, lifts, wheelchair and scooter hoists, transfer seat bases, wheelchairs suitable to utilize as a driver seat, and / or wheelchair securement systems.
Typical Vehicle Modification: Primary Controls: Gas, Brake, Steering	Uses OEM^ controls.	Primary driving control examples: A) mechanical gas / brake hand control; B) left foot accelerator pedal; C) pedal extensions; D) park brake lever or electronic park brake; E) steering device (spinner knob, tri-pin, C-cuff).	Primary driving control examples (in addition to Low Tech options): A) powered gas / brake systems; B) power park brake integrated with a powered gas / brake system; C) variable effort steering systems; D) reduced diameter steering wheel, horizontal steering, steering wheel extension, joystick controls; E) reduced effort brake systems.
Typical Vehicle Modification: Secondary Controls	Uses OEM^ controls.	Secondary driving control examples: A) remote horn button; B) turn signal modification (remote, crossover lever); C) remote wiper controls; D) gear selector modification; E) key / ignition adaptions.	Electronic systems to access secondary and accessory controls. Secondary driving control examples (in addition to Low Tech options): A) remote panels, touch pads or switch arrays that interface with OEM^ electronics; B) wiring extension for OEM^ electronics; C) powered transmission shifter.

#DRS - Health professional degree with specialty training in driver evaluation and rehabilitation, *CDRS – Certified Driver Rehabilitation Specialist – Credentialed by ADED (Association for Driver Rehabilitation Specialists). +SCDCM – Specialty Certified in Driving and Community Mobility by AOTA (American Occupational Therapy Association) ^OEM – Original Equipment installed by Manufacturer.
**LDI-licensed driving instructor.

Driver Rehabilitation Programs: Defining Program Models, Services, and Expertise.
Occupational Therapy In Health Care, 28(2):177–187, 2014

Trail-Making Test for Screening, Part A and B

Administration Instructions

This test of general cognitive function specifically assesses working memory, visual processing, visuospatial skills, selective and divided attention, processing speed, and psychomotor coordination. In addition, numerous studies have demonstrated an association between poor performance on the Trail-Making Tests and poor driving performance.

Instructions for Part A. Using the sample of A, the administrator says: "*There are numbers in circles on this page. Please take the pencil and draw a line from one number to the next, in order. Start at 1 [point to the number], then go to 2 [point], then go to 3 [point], and so on. Please try not to lift the pen as you move from one number to the next. Work as quickly and accurately as you can."* If there is an error: "*You were at number 2. What is the next number?*" Wait for the individual's response and say, "*Please start here and continue*."

Test A: If Sample A is completed correctly, the administrator repeats the above instructions for Trails A. Start timing as soon as the instruction is given to begin. Stop timing when the Trail is completed, or when maximum time is reached (150 seconds = 2.5 min).

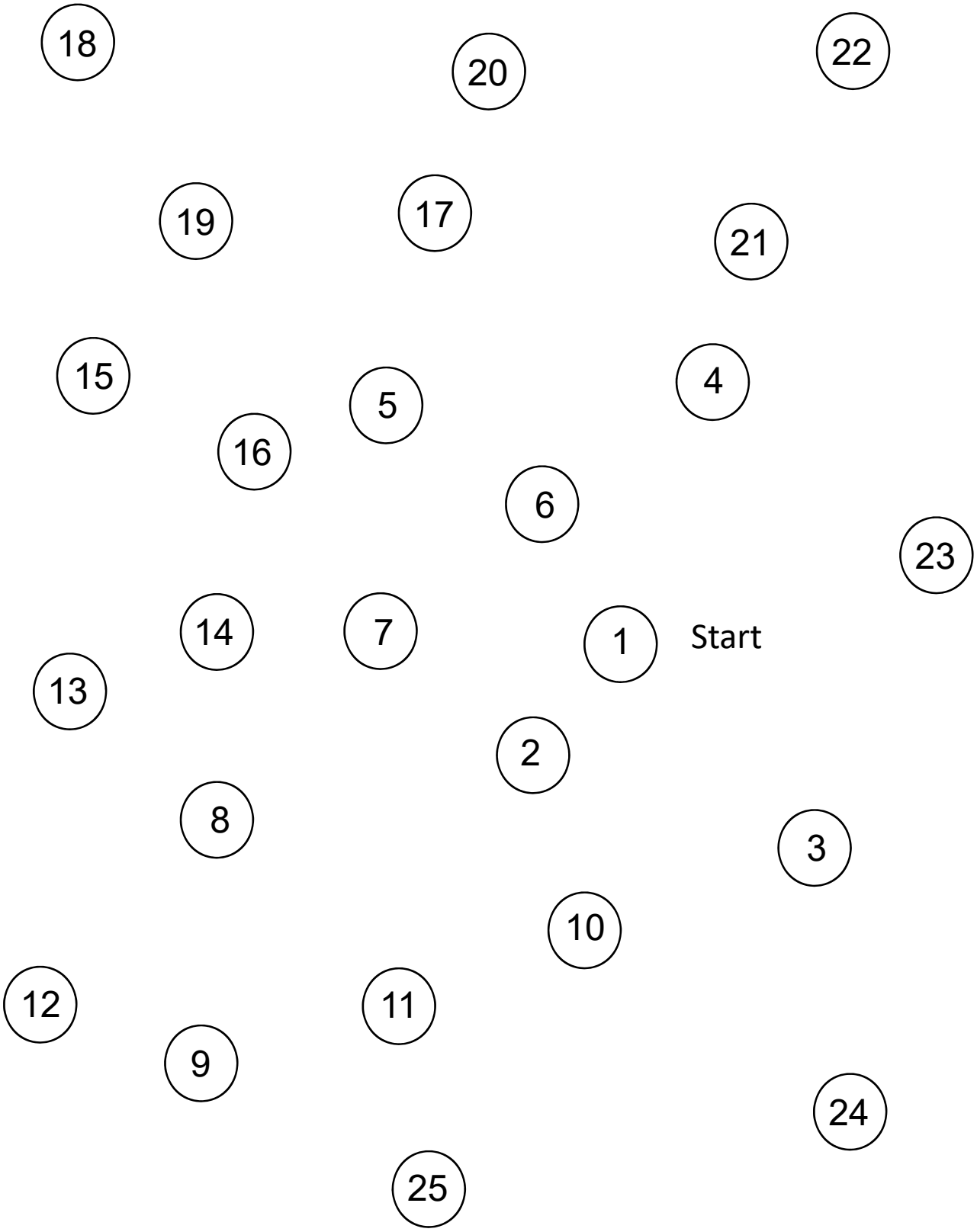
Instructions for Part B. Using the sample of B, the administrator says: "*There are numbers and letters in circles on this page. Please take the pen and draw a line, alternating in order between the numbers and letters. Start at number 1 [point], then go to the first letter, A [point], then go to the next number, 2 [point], and then the next letter, B [point], and so on. Please try not to lift the pen as you move from one number or letter to the next. Work as quickly and accurately as you can."* If there is an error: "*You were at number 2. What is the next letter*?" Wait for the individual's response and say, "*Please start here and continue*."

If Sample B is completed correctly, the administrator repeats the above instructions for Trails B. Start timing as soon as the instruction is given to begin. Stop timing when the Trail is completed, or when maximum time is reached (300 seconds = 5 min).

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 3–4 minutes to administer, but should be stopped after 5 minutes.

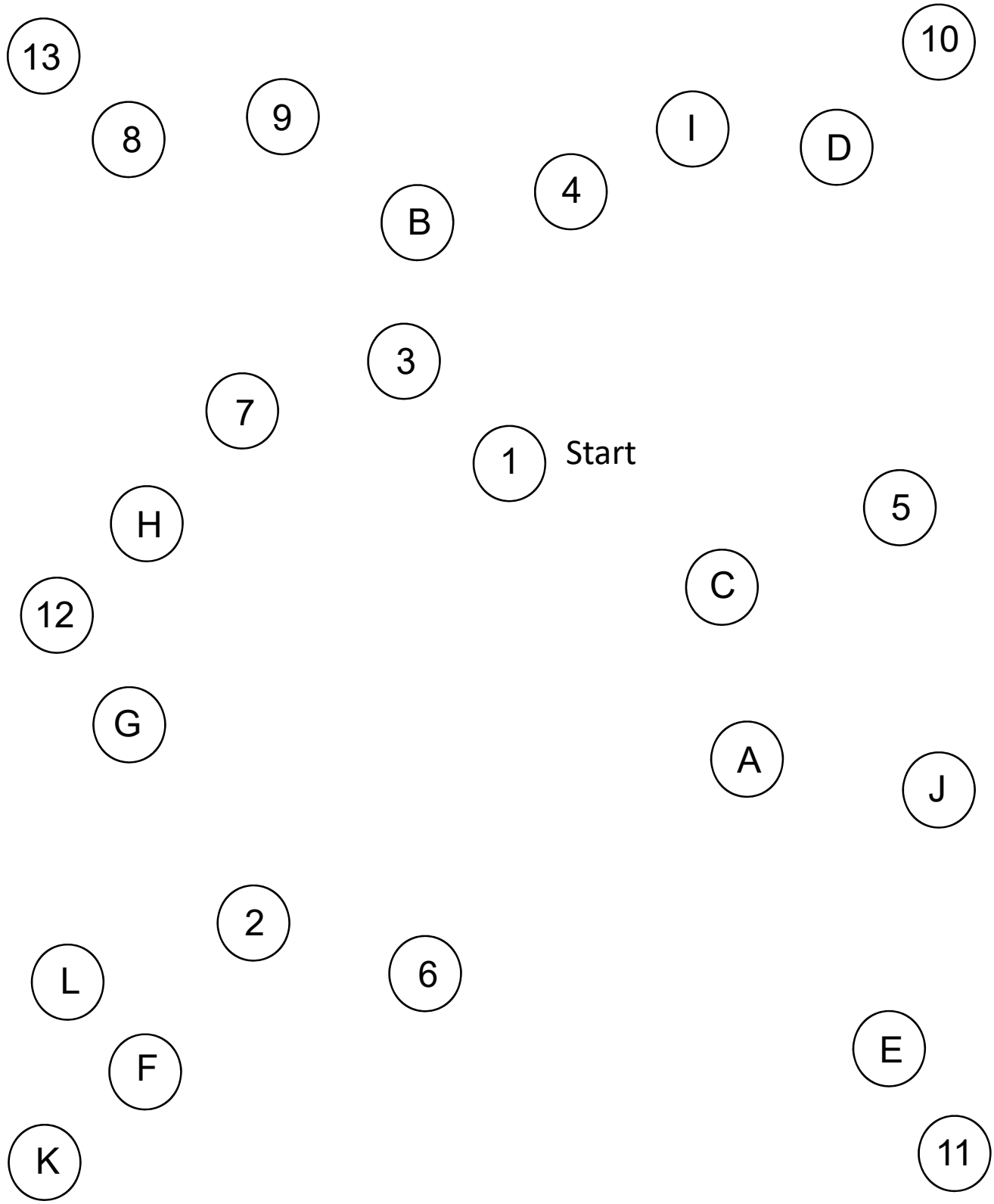
Trail Making Test, Part A

Client Name: _____ Date: _____



Trail Making Test, Part B

Client Name: _____ Date: _____



The American Geriatrics Society (AGS) differentiates driving capacity from driving fitness. This fact sheet is based on the AGS approach and uses that distinction. The state ultimately decides whether or not an older Veteran has the capacity to drive (e.g., driving test) and retains legal driving privileges (i.e., driver's license). ***It is the clinician's responsibility to fairly and accurately report factors that may contribute to unsafe driving – fitness to drive.***

Capacity and Fitness to Drive a Motor Vehicle

EDUCATIONAL HANDOUT SERIES

VA
U.S. Department of Veterans Affairs
Veterans Health Administration
Employee Education System

What VA policies may apply?

VA Clinicians must follow VA laws, regulations and policies, in addition to clinical practices, when treating Veterans and sharing Veteran health information. The following information may assist in identifying relevant polices. Veterans with "neurological and brain disorders," as well as Veterans with "disabilities associated with aging," are among those eligible for the VA Driver Rehabilitation Program (**VHA Handbook 1173.16**). Clinicians should make reports to the Registry of Motor Vehicles in accordance with VA privacy rules, state law and clinical ethics. In general, in order for a VA health care facility, upon its own initiative, to make a report to a State Department of Motor Vehicles (DMV), there must be a standing written request letter on file from the State agency that complies with VHA Directive 1605.01, Privacy and Release of Information.
To view VA DMV privacy rules see also "Reporting to State Department of Motor Vehicles Privacy Fact Sheet" at **https://vaww.vets.vaco.portal.va.gov/sites/privacy/vhapo/Pages/FactSheets.aspx.**
If you have further questions regarding law and policies for reporting within your state, please consult with your facility Privacy Officer or district counsel.

How might dementia affect Fitness to Drive?

Most older adults do not have dementia, and the presence of dementia does not necessarily mean that an older adult lacks capacity for domains such as consent to treatment, choosing a healthcare agent, or other types of decisions. Patients with mild dementia can often drive safely. Opinions on fitness to drive for patients with mild dementia should be based on functional abilities (e.g. ability to pass a road test), and not solely on a diagnosis of dementia per se. As dementia progresses, different abilities and skills may be affected depending on the dementia subtype and individual factors, as well as comorbidities. For example, some individuals with dementia retain the basic ability to operate a motor vehicle, but may become lost when driving or feel challenged when a complex decision is required quickly.

What supports may help?

When assessing an older Veteran's fitness to drive, clinicians should consider whether or not optimizing functional status could allow him or her to continue to drive safely. Identifying and addressing sensory deficits, including visual deficits and hearing loss, is critical. VA prosthetics may be able to assist with adaptive devices, and newer cars may include technologies to assist in safe driving, just as GPS devices may assist in location. Finally, your VA, your state, and/or private organizations and insurance companies may provide education and rehabilitation to improve driver performance.

How do I start?

When the older Veteran driver has significant cognitive impairment and/or lacks insight into their ability to drive (e.g., in certain cases of dementia, stroke, etc.), it is imperative to obtain the help of the caregiver, surrogate decision-maker, or guardian, if available. Caregivers play a crucial role in encouraging the older Veteran to retire from driving and to help the individual find alternative transportation options. Clinicians should inform caregivers that the clinical team will support and assist their efforts in any way possible. In rare instances, it may be necessary to appoint a legal guardian for the older Veteran. In turn, the guardian may forfeit the older Veteran's car and license to ensure the individual's safety. These actions should be taken only as a last resort. From a practical standpoint, hiding, donating, dismantling, or selling the car may also be useful in these difficult situations.

What are the most important areas to consider when assessing fitness to drive?

Three key functional areas are considered as the foundation for fitness to drive: vision, cognition, and motor/somatosensory function. Impairment in one or more of these areas has the potential to increase the older Veteran's risk of being involved in a crash. Once these areas are assessed, the health care provider can determine if referral to a specialist (e.g., ophthalmologist, neuropsychologist, driver rehabilitation specialist) for further evaluation or intervention is needed.

Domain	Potential office-based tests to consider (Select 1 or more from American Geriatrics Society recommendations.)
General	Driving history; Instrumental activities of daily living (IADL); Recent medication changes
Vision	Snellen chart; Visual fields; Contrast sensitivity
Cognition	Montreal Cognitive Assessment (MoCA); Trails B; Clock-drawing test; Maze test
Motor/Sensory	Rapid pace walk; Get up and go; Range of motion

Which states require mandatory reporting from clinicians who become aware of a potential for unsafe driving?

State laws vary as to whether clinicians are mandated to contact the division of motor vehicles. Mandatory reporting states as of 2017 include California, Delaware, New Jersey, Nevada, Oregon, and Pennsylvania.

When should I refer to a Driving Rehabilitation Specialist (DRS)?

DRSs are often occupational therapists who have additional training in driver rehabilitation. DRSs work with older drivers who have dementia and other chronic conditions, especially neurologic and orthopedic problems. Clinicians should consider ordering a DRS evaluation when the Veteran, family, friends, and/or the clinician have concerns about the Veteran's fitness to drive. An evaluation from a DRS is particularly useful when there is disagreement about whether the older Veteran is safe to drive. DRSs evaluate the sensory (vision, proprioception), cognitive, and motor functional abilities which support driving skills, and they may also provide assessment and/or training in the vehicle and on the road. DRSs can recommend either rehabilitation when restoration of abilities is deemed possible, or modifications (e.g., hand controls, left foot accelerator) to compensate for physical impairments. To address issues of normal aging and slowed processing, DRSs can recommend compensatory strategies that may include route modifications (e.g., no left turns, avoid rush hour) or suggest restrictions (e.g. daylight driving only, speed restrictions) to support ongoing driving. DRSs may also recommend to the primary care provider that the older Veteran is unsafe to drive and should retire from driving.

Suggested Online Resources

Driver Rehabilitation for Veterans with Disabilities Program (VHA Handbook 1173.16)	VA handbook of procedures for all matters regarding the Driver Rehabilitation Program for Veterans	**https://www.va.gov/VHAPUBLICAtIONs/ViewPublication.asp?pub_ID=5621**
Driving with Dementia: Hanging Up the Keys	Video from VA partners addresses drivers with cognitive impairment.	More resources can be found by searching the TMS catalog with 'Driving with Dementia'

Acknowledgement and Disclaimer

This fact sheet is based on the following reference: Pomidor A, ed. Clinician's Guide to Assessing and Counseling Older Drivers, 3rd Edition. New York: The American Geriatrics Society; 2015.
This handout was developed as part of an educational effort sponsored by the VHA Employee Education System and the VHA Office of Geriatrics and Extended Care. This handout is one from the Assessment of Decision Making Capacity Handout Series which links to a VA TMS educational activity. Information presented in this handout was based on the consensus of the educational planning committee considering research, practice, and general principles at the time of its drafting. The purpose of this document is for education. The contents should not be construed as policy, but rather as an educational resource that may be useful and effective in clinical practice. VA Clinicians must follow VA laws, regulations and policies, in addition to clinical practices, when treating Veterans and sharing Veteran health information. Links to free clinical resources may be included in the handout but should not be construed as official endorsement of these tools.

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Additional Resources at: Additional Resources are available at the VA TMS system. Please search the course catalog by keyword 'capacity'.
References: American Geriatrics Society & A. Pomidor, Ed. (2016, January). Clinician's guide to assessing and counseling older drivers, 3rd edition. (Report No. DOT HS 812 228). Washington, DC: National Highway Traffic Safety Administration.