

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 2017.³ 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.

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

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

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 high⁷ 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).

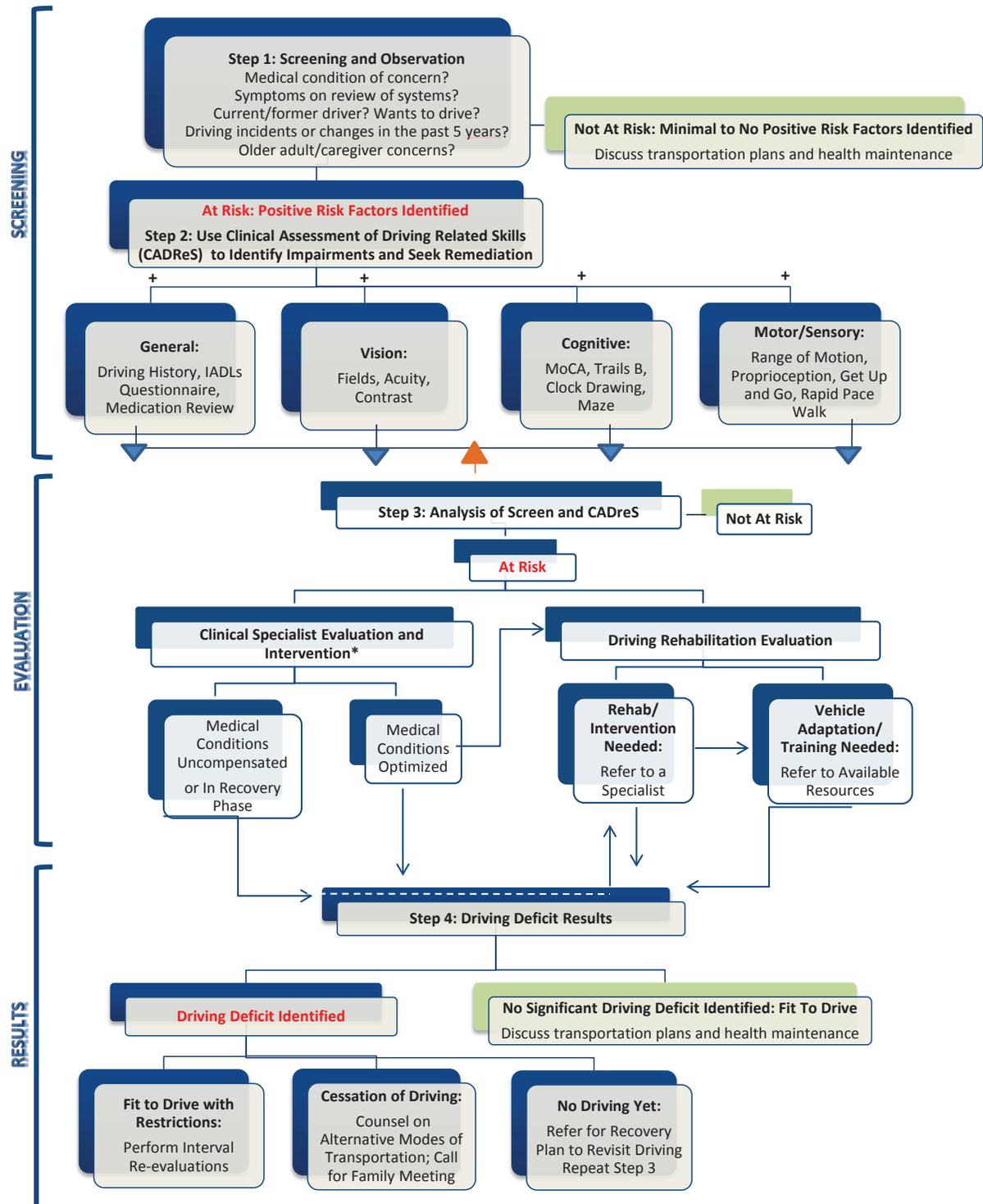
- **Refer** older adult drivers with persistent deficits despite optimal medical treatment, when appropriate, to a driving rehabilitation specialist for further driving evaluation and/or training in the use of adaptive equipment (see Chapter 5).

■ 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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