



# PROCEED WITH CAUTION

Driving advice for people with epilepsy, Parkinson's, and Alzheimer's, and their families.

BY ANDREW WILNER, M.D.

**M**ary\* has epilepsy. Early one morning while driving to work, Mary had a seizure, got into a car accident, and lost her license. Now that her seizures are controlled, Mary has returned to driving. But because she knows she might have a seizure when she is sleep-deprived, she avoids getting behind the wheel at those times.

"If I am experiencing lack of sleep, I depend on family and friends for transportation," Mary says.

Many people with neurological conditions—such as epilepsy, Parkinson's disease, and Alzheimer's disease—face driving challenges. Seizures due to epilepsy, slowed movements due to Parkinson's, and memory loss from Alzheimer's may affect one's

ability to drive a motor vehicle safely. However, regular driving assessments, proper treatment of those neurological conditions, and access to alternative modes of transportation can help ensure that people with neurological disorders retain their independence without endangering themselves or others.

While most of us learn to drive when we are teenagers and consider driving second nature, maneuvering a motor vehicle is actually a complex skill that requires advanced planning, memory, and decision-making skills and high levels of attention and eye-hand coordination—as well as the ability to respond quickly to changing road conditions. Some or all of these abilities may be affected by neurological disorders. In addition, pre-

\*not her real name



scription medications can cause drowsiness or other side effects that may impair driving. Of course, alcohol and recreational drugs diminish reflexes and judgment as well.

According to data from the National Highway Traffic Safety Administration ([nhtsa.dot.gov](http://nhtsa.dot.gov)), drivers over age 65 have the second highest rate of fatal crashes, based on miles driven, of any group (drivers under 24 have the highest rate). The high death rate is in part due to the fact that older people are less likely to survive an injury than younger people, but also because older age tends to be accompanied by impaired vision, hearing loss, decreased mobility, and neurological and cognitive impairment.

Because of the slowly progressive nature of both Alzheimer's and Parkinson's disease, it may not be obvious to the person with the condition—or to the family and the doctor—that he or she is no longer a safe driver. There may even be strong differences of opinion regarding whether the person can drive safely. One of the key features of dementia is loss of insight, which can further limit the ability of a person with Alzheimer's or Parkinson's to judge when it is time to stop driving. And because driving can be so important for work and social activities, many people are understandably reluctant to give it up.

Marwan Sabbagh, M.D., director and senior scientist at the Sun Health Research Institute, Sun City, AZ, and the author of *The Alzheimer's Answer: Reduce Your Risk and Keep Your Brain Healthy* (John Wiley and Sons, 2008), struggles with the problem of Alzheimer's disease and driving in his practice. "Patients are generally hostile and resistant to [discussing] the

topic. Families are frequently relieved that they are not the 'heavy' and can blame the doc for the loss of driving freedom," Dr. Sabbagh says. He adds, "Every state has a different law regarding dementia and driving, so physicians need to be familiar with those laws when discussing the issue with patients and families."

## EPILEPSY

Mary's car accident occurred after a poor night's sleep due to the flu. "I have learned the hard way to listen to my body," Mary says. "With lack of sleep I eventually have an aura. I also educated myself more on my disease after the accident, which made me more in tune with my body. Exercise does help me sleep better, so I do this at least six days a week," she adds.

Selim Benbadis, M.D., professor and director of the Comprehensive Epilepsy Program at the University of South Florida and Tampa General Hospital, observes, "Patients with epilepsy and controlled seizures can drive safely. In fact, one of the biggest motivating factors in getting patients to adhere to their medication is the goal of becoming seizure-free so that they can drive."

However, seizures that interfere with consciousness, such as generalized tonic-clonic seizures (convulsions), partial complex seizures, and absence seizures (petit mal) are not compatible with safe driving. An aura, which is really a small seizure, may warn that a larger seizure is soon to follow.

Driving rules for people with epilepsy differ depending upon the state in which they live, ranging from seizure-free

periods of as little as three months (Arizona) to as long as 18 months (Rhode Island). Driving rules for each state can be reviewed on the Epilepsy Foundation Web site ([efa.org](http://efa.org)). It is the driver's responsibility to follow the rules of his or her state. If seizures occur only during sleep, do not affect judgment and ability to drive, or are preceded by a very long warning in the form of an aura, then driving may still be permitted. In six states—California, Delaware, Nevada, New Jersey, Oregon, and Pennsylvania—doctors are required to report patients who drive in spite of uncontrolled seizures.

Alternatives to driving include buses, car pools, subways, taxis, trains, special transportation for people with disabilities, and friends. Volunteers from local church groups may be willing to drive to medical appointments or other destinations. Other options may be available (See Resource Central, page 37).

## PARKINSON'S DISEASE

Parkinson's disease is the second most common neurodegenerative disease (after Alzheimer's). Like Alzheimer's disease, Parkinson's usually affects older individuals. People with Parkinson's develop problems with motor function, such as stiffness, rigidity, tremor, and unsteady gait. As a result, important tasks such as moving the foot from the accelerator to the brake pedal or turning the steering wheel may become too difficult for someone with Parkinson's. People with Parkinson's may also experience non-motor symptoms such as difficulty thinking clearly and depression. (Go to [apdaparkinson.org](http://apdaparkinson.org) for a list of symptoms.)

Medications for Parkinson's disease may cause drowsiness and (rarely) sudden sleep episodes, both of which can cause accidents. In addition, many people with Parkinson's disease experience a "wearing off" phenomenon as the beneficial effects of medications decrease during the day. During these times, driving may be more difficult.

A study of 25 drivers with Parkinson's disease and 21 control subjects who took road tests demonstrated that the drivers with Parkinson's were significantly less safe (*Journal of Neurology, Neurosurgery, and Psychiatry*, 2005). They made more blind-spot, lane-keeping, and lane-changing errors and had more problems parking, reversing, and negotiating traffic lights than drivers of the same age without Parkinson's. In addition, the driving instructor had to intervene more often during the test to prevent accidents for drivers with Parkinson's disease. These drivers were aware that they had some problems operating a motor vehicle but could not accurately predict their safety rating.

Jeff Bronstein, M.D., Ph.D., director of movement disorders at the UCLA School of Medicine in Los Angeles, CA, understands the challenges in addressing driving limitations in people with Parkinson's. "The issue of driving is a big problem both practically and emotionally because driving represents independence. It is difficult to balance the rights of the patient and the safety of society. Doctors are not well prepared to make this judgment, often because it can result in patients not wanting to confide their limitations to their doctor."

Dr. Bronstein recommends driving assessments and training. "In California, where I practice, if we have concerns due to motor or cognitive impairment, we report them to the Department of Motor Vehicles and advise the patient not to drive," he says. But, Dr. Bronstein adds, "Each state has different requirements. If there is any doubt about a patient's ability to drive, a road test can help assess driving safety. Additional training may be available to help patients become safer drivers."

## ALZHEIMER'S DISEASE

Alzheimer's disease affects more than four-and-a-half million adults in the United States. While people in the early stages may drive safely, those in advanced stages increasingly lose the ability to perform complicated tasks. In 2000, the American Academy of Neurology published guidelines regarding Alzheimer's and driving in their journal *Neurology*.<sup>®</sup> The guidelines are based on an assessment called the Clinical Dementia Rating (CDR), a five point scale where 0 equals no dementia;



### ADVICE FOR DRIVING WITH EPILEPSY

- Take your anti-seizure medications on time, every day.
- If your doctor changes your medicine, don't drive until you know how the change is going to affect you.
- If you have a seizure, don't drive yourself to the doctor's office afterwards. If you need medical attention, call a friend or take other transportation.
- Don't drive if your seizure control isn't good enough to get a license, or if you start having seizures again after getting a license.
- Be aware that insurance may not cover you in an accident if you are driving illegally when it happens.

Source: The Epilepsy Foundation ([efa.org](http://efa.org))

“The issue of driving is a big problem both **practically and emotionally** because driving represents independence.”

0.5 equals very mild dementia; and 1, 2, and 3 equal mild, moderate, and severe dementia, respectively. The test is administered as a structured interview to the patient and caregiver and assesses memory, orientation, judgment and problem solving, community affairs, home and hobbies, and personal care. People with a CDR score of 0.5 are considered “mildly impaired” and in need of a driving performance evaluation to determine whether they can still drive safely. Those who progress to a CDR score of 1 are assumed to have “substantially increased accident rates and driving performance errors.” For these people, according to the guidelines, “discontinuation of driving should be strongly considered.”

In a study published in the journal *Neurology*® in 2008, researchers compared drivers with Alzheimer’s disease to people of the same age without Alzheimer’s disease. The drivers with Alzheimer’s were more likely to fail road tests. While many people with Alzheimer’s disease did pass the road test, their driving tended to get worse with time, as the disease progressed.

Brian Ott, M.D., an Alzheimer’s specialist at Rhode Island Hospital in Providence, RI, and lead author of the study, explains his approach to drivers with Alzheimer’s disease. “We screen for potential driving impairment and obtain a history of accidents and violations from the patient and caregiver,” he says. “Additional risk information is obtained from the Clinical Dementia Rating, Mini-Mental Status Examination, and clock drawings administered during an office visit.”

The clock drawings involve asking the person to draw a clock in order to assess various cognitive functions, and errors on clock drawing may indicate a need for more detailed risk assessment, he says. The Mini-Mental Status Examination is the most commonly used screening test for dementia and is scored from 0–30. Any score over 27 is considered normal; 20–26 indicates mild dementia; 10–19 moderate dementia, and below 10 severe dementia. Patients with scores below 20 are often unsafe to drive, Dr. Ott notes, and those with moderately severe dementia are strongly recommended to give up driving.

Dr. Ott makes his recommendations based on road tests as well as testimonials. “For patients with mild dementia,” he says, “if they are able to pass a road test and are not having any accidents, and if the caregivers support them as safe drivers, we recommend that they plan to curtail driving over the coming year and that their driving be readdressed every six months. Repeat road tests may be done at six months or at one year.”

Dr. Sabbagh also stresses the importance of road tests. “I do refer patients for formal driving evaluations. It gives objective evidence of impairment if there is such impairment.”

The Alzheimer’s Association ([alz.org](http://alz.org)) has published tips for patients and families on how to cope with the loss of driving ability. The Alzheimer’s Association can also provide information about driving laws in each state.

## FREEDOM AND SAFETY

Neurological diseases such as epilepsy, Alzheimer’s, and Parkinson’s disease may present formidable obstacles to driving. For people with epilepsy, like Mary, seizure freedom allows safe driving. However, progressive neurological disorders such as Alzheimer’s and Parkinson’s will eventually limit driving abilities. When in doubt whether it’s safe to drive, an “on road” driving assessment may be helpful, and people with Alzheimer’s and Parkinson’s disease should periodically reassess their driving skills. By discussing the emotional and practical aspects of driving with their families and doctors, people with neurological conditions can successfully balance their needs for independence and freedom with their own safety and the safety of others. NN

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For more information on driving and neurological disorders, see **RESOURCE CENTRAL** on page 37.



## WARNING SIGNS OF UNSAFE DRIVING

The Association for Driver Rehabilitation Specialists ([aded.net](http://aded.net)), which provides comprehensive driver evaluations to determine a driver’s safety, has created a list of eight warning signs that suggest someone with Alzheimer’s disease may not be able to drive safely:

- Driving too slowly
- Doesn’t observe signs or signals
- Difficulty interpreting traffic situations and predicting changes
- Failure to yield
- Easily frustrated or confused
- Frequently gets lost
- Needs instructions from passengers
- Poor road position or driving the wrong way down streets