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## Understanding and Helping Drivers with Alzheimer's Disease

By Linda A. Hunt, PhD, OTR/L, FAOTA; Professor, School of Occupational Therapy; and Director, Graduate Certificate in Gerontology, Pacific University Oregon, Forest Grove, OR

Alzheimer's disease, the most common form of dementia, offers unique challenges for law enforcement as the presence of this chronic disease may impair many older adults. Alzheimer's disease challenges law enforcement when an older adult with dementia violates road safety laws. Furthermore, complications arise when law enforcement officers encounter an older adult who is lost. This article will review these issues by providing background information on the disease, research on driving behaviors affected by Alzheimer's disease, and suggestions for law enforcement (and other related-dementias) and their caregivers—usually, family members.

The number of Americans with Alzheimer's disease and other dementias will grow each year as the proportion of the U.S. population that is over age 65 continues to increase. The number of Americans aged 65 and older is expected to increase by 50 percent over the next 30 years as the baby boomer generation ages. An estimated 5.4 million Americans of all ages have Alzheimer's disease in 2011. This figure includes 5.2 million people aged 65 and older who have early-onset Alzheimer's disease.<sup>2</sup> The National Alzheimer's Disease Association breaks this down to one in eight people aged 65 and older (13 percent) have Alzheimer's disease, and one in four (25 percent) aged 85 and older (43 percent) have this disease.<sup>3</sup>

### Signs and Symptoms of Alzheimer's Disease

For the first time in 27 years, clinical diagnostic criteria for Alzheimer's disease—caused dementia have been revised, and research guidelines for earlier stages of the disease have been established, increasing our understanding of the disorder. The National Institute on Aging—Alzheimer's Association Guidelines for the Neuropathologic Assessment of Alzheimer's Disease outline some new criteria for diagnosis. Scientists with more advanced guidelines for moving forward with research on diagnosis and treatments. The new guidelines mark a major change in how experts think about Alzheimer's disease. The new guidelines were led by the National Institutes of Health and the Alzheimer's Association. The new guidelines expand the criteria for Alzheimer's dementia beyond memory loss to include other cognitive functions. They recognize that problems with other aspects of cognition, such as word-finding ability or judgment, may be the first symptoms to appear. The 1984 criteria focused on memory loss as the primary symptom of Alzheimer's dementia.<sup>4</sup> Behaviors that may impact the ability to drive a vehicle include

- demonstrating decreased coordination;
- experiencing difficulty judging distance and space;
- becoming lost or feeling disoriented in familiar places;
- experiencing difficulty engaging in multiple tasks;
- having increased memory loss, especially for recent events;
- being less alert to things happening around him or her;
- experiencing mood swings, confusion, or irritability;
- requiring prompting for personal care;
- having difficulty processing information; and
- experiencing difficulty with decision making and problem solving.<sup>5</sup>

### How the Signs and Symptoms Affect Driving Ability

Alzheimer's disease is viewed as a disorder primarily of memory loss. Yet researchers have long known that Alzheimer's disease is characterized by impairments in several areas of cognition. The neuropathology of this disease affects several brain areas that are devoted to processing visual functions, which in turn affect attention and cognition. Suzanne Holroyd points out that visual hallucinations are a common hallucination in Alzheimer's disease, occurring in 12 percent to 53 percent of people with the disease.<sup>6</sup> Holroyd explains that Alzheimer's disease is associated with a number of visual impairments, including these multifactorial abnormalities such as decreased contrast sensitivity (that is, the ability to see an object against a background of similar color or contrast); stereoacuity (that is, the ability to judge depth); and visual agnosia (that is, the ability to identify familiar objects) create visual hallucinations.

People with Alzheimer's often present first with complaints of visual loss, difficulties recognizing objects, deterioration in eye-hand coordination, and topographic disorientation. These symptoms are often related to higher-order cognitive symptoms and a reduction in functional capacities. Everyone seems to understand the effects of vision on driving; however, the effects of cognitive impairments on driving by impaired drivers with cognitive deficits and their caregivers.

Shaun Vecera and Matthew Rizzo argue that many of the cognitive, attention-related impairments evident in Alzheimer's disease might be produced by limitations in visual short-term memory. People with Alzheimer's disease may exhibit impairments in searching through a cluttered visual scene. As in driving, people are required to visually search their environs for information and respond to visual events. Visual short-term memory may be influenced by not receiving clear visual information at the beginning of the visual search. Impairments in visual short-term memory may result in a driver not recognizing familiar buildings or objects in an environment of many buildings and objects that would normally provide navigational orientation.<sup>8</sup> Mark Mapstone and others argue that the limited availability of visual spatial attention may lead to a reliance on object information for navigation, which is a memory-dependent strategy.<sup>9</sup> Therefore, the need for object memory and the limited availability of visual spatial attention contribute to the impairments experienced by drivers with Alzheimer's disease.

### Poor Driving Behaviors Resulting from Impairments

Alzheimer's disease is a global brain disease, meaning that it affects various areas of the brain resulting in a variety of functional impairments. There are myriad ways that the effects of Alzheimer's disease can result in poor driving. Becoming less coordinated may result in a driver with dementia having trouble moving a leg from the accelerator to the brake smoothly. Or, the pedal may be missed, resulting in a driver not having enough time to stop a vehicle. Another example is the inability to judge distance and space, which may result in turning inappropriately across traffic lanes—for example, attempting a left turn without sufficient time to do so safely. Furthermore, poor spatial abilities may result in difficulty maintaining the vehicle in the appropriate driving lane. Drivers may cross over the centerline or into other drivers' lanes with no awareness. Another trait is having difficulty engaging in multiple tasks and, therefore, being less alert to the driving environment. For example, a driver may be focused on a particular street and might overlook safety issues in the current traffic. Here, the driver's attention is challenged while switching attention from one situation to another—a necessary skill for safe driving. Finally, the inability to process information is observed in reduced reaction time and driving below the speed limit.

Linda Hunt documents these behaviors, as well as the inability for drivers with dementia to readily make decisions at intersections.<sup>10</sup> These drivers tend to take cues from other drivers at an intersection when they clearly have the right of way.

The increased memory loss and disorientation in familiar places has led many drivers with dementia to become lost with tragic outcomes.<sup>11</sup> Among 207 reports of lost drivers with dementia, 32 drivers were found dead, and 116 drivers were found alive—35 of whom were injured. For the people found alive, the range of miles from the location at which they were found was an average of 1.99 days missing. For the people found dead, the range of miles from the point of origin was 4 miles to 930 miles, with an average of 26.76 days until a body was found.

- unknown,
- drowned after driving into a body of water,
- drove into a mine and could not find way out,
- struck a tree,
- unspecified motor vehicle accident, and
- died from exposure to elements.

Clearly, law enforcement has a role in preventing these tragedies, as lost drivers may be stopped by law enforcement for poor driving practices or might stop to ask law enforcement for help.

### Possible Solutions

Law enforcement officers are instrumental in assisting drivers with dementia. The assistance may come through issuing tickets for traffic violations in a clear signal to families that the driver is impaired. Oftentimes, family members report to the medical community that the impaired driver was stopped by a police officer for a traffic violation. However, they often report, a ticket was not issued. Family members report that they feel sorry for the older driver and may provide only a verbal warning. Family members struggle with driver cessation—that is, removing the car from the person who is impaired. It is helpful if there was physical evidence of impaired driving such as tickets and reports sent to the Department of Motor Vehicles to help resolve the argument that it is time to stop driving.

continue to review with clients help to sustain the driving cessation process. It is law enforcement that may begin the process of driver cessation.

There are signs that a driver with dementia is lost. Looking for these signs may help law enforcement provide immediate assistance to the driver with Alzheimer's disease or other need for assistance. For example, when drivers are found lost and request information, these drivers may repeat the same questions—a sign of memory impairment. Moreover, the distance traveled, and how these pieces of information relate to the story the driver is telling. For example, drivers may report they were headed for the grocery store in the neighborhood familiar location. Another signal that something is wrong is if individuals are driving late at night for several hours in search of a location. Police officers often report that they stop in the lane lines or are driving too slowly. Police officers believe they are stopping an intoxicated driver, only to find that the driver is in distress from driving lost. Clearly, a physical sign is the driver home or calling a relative or friend to retrieve the driver. (On a cautionary note, drivers with dementia may not be able to follow a family member home. On numerous occasions, drivers become lost again as they forget they are supposed to be following another driver. The traffic may require problem-solving skills to continue following a specific vehicle—skills that are often impaired in dementia.)

Another sign that a driver may have Alzheimer's disease or other related dementia is the driver's appearance. For example, drivers may be disheveled or dressed inappropriately. They may be hungry, thirsty, or in need of medications. All these concerns may be approached with thoughtful questioning to decide whether or not a person is memory impaired. Finally, there is the concern of driving because research has shown that couples became lost and died together.<sup>12</sup> One report described a man with dementia who left on foot to seek help while his wife stayed in the car but he could not remember the location of the vehicle. His wife consequently died.

## Conclusion

The effects of impaired memory on the ability to drive cannot be ignored. A "magic period" when it is safe for people with dementia to drive may not exist. Drivers with dementia have driving privileges, as these privileges provide personal mobility and independence. With Alzheimer's disease comes the loss of insight. Drivers with dementia tend to disbelieve they are impaired, and are usually the first responders to these memory impaired drivers. Conversations on how best to help drivers with dementia need to occur in partnership with law enforcement; health care providers; therapists who evaluate driver capacity and social workers who may direct clients to appropriate escorted community transportation resources; the National Alzheimer's Association; and the National Highway Traffic Safety Administration.

## Notes:

<sup>1</sup>Liesi E. Hebert et al., "Alzheimer Disease in the U.S. Population: Prevalence Estimates Using the 2000 Census," *Archives of Neurology* 60, no. 8 (August 2003): 1119–1122, <http://archneur.ama-assn.org/lookup/doi/10.1001/archneur.60.8.1119> (accessed September 19, 2011).

<sup>2</sup>Katie Maslow, *Early Onset Dementia: A National Challenge, a Future Crisis* (Washington, D.C.: The Alzheimer's Association, 2006), [http://www.alz.org/national/documents/report\\_earlyonset\\_summary.pdf](http://www.alz.org/national/documents/report_earlyonset_summary.pdf).

<sup>3</sup>William Thies and Laura Bleiler, "2011 Alzheimer's Disease Facts and Figures," *Alzheimer's and Dementia* 7, no. 2 (March 2011): 208–244, <http://download.journals.elsevierhealth.com/pdfs/journals/1876-7765/2011/03/Alzheimer's%20Disease%20Facts%20and%20Figures.pdf> (accessed September 26, 2011).

<sup>4</sup>National Institute on Aging, "Alzheimer's Diagnostic Guidelines Updated for First Time in Decades," press release, April 19, 2011, <http://www.nia.nih.gov/Alzheimers/ResearchInformation/NewsRelease/2011-04-19> (accessed September 19, 2011).

<sup>5</sup>"Dementia and Driving," Family Caregiver Alliance, [http://www.caregiver.org/caregiver/jsp/content\\_node.jsp?nodeid=432](http://www.caregiver.org/caregiver/jsp/content_node.jsp?nodeid=432) (accessed September 19, 2011).

<sup>6</sup>Suzanne Holroyd, "Visual Hallucinations in Alzheimer's Disease," *Vision in Alzheimer's Disease*, Interdisciplinary Topics in Gerontology, edited by A Cronin-Golomb and P.R. Hoff, 34 (Basel, Switzerland: Karger, 2004), 290–304.

<sup>7</sup>Shaun P. Vecera and Matthew Rizzo, "Visual Attention and Visual Short-Term Memory in Alzheimer's Disease," *Vision in Alzheimer's Disease*, Interdisciplinary Topics in Gerontology, edited by A Cronin-Golomb and P.R. Hoff, 34 (Basel, Switzerland: Karger, 2004), 248–270.

<sup>8</sup>Linda A. Hunt, Alaina E. Brown, and Isaac P. Gilman, "Drivers with Dementia and Outcomes of Becoming Lost while Driving," *American Journal of Occupational Therapy* 64, no. 2 (March/April 2010): 225–232, <http://ajot.aota.org/content/64/2/225.full.pdf+html> (accessed September 19, 2011).

<sup>9</sup>Mark Mapstone and Sandra Weintraub, "Closing the Window of Spatial Attention: Effects on Navigational Cue Use in Alzheimer's Disease," *Vision in Alzheimer's Disease*, Interdisciplinary Topics in Gerontology, edited by A Cronin-Golomb and P.R. Hoff, 34 (Basel, Switzerland: Karger, 2004), 290–304.

<sup>10</sup>Linda A. Hunt et al., "Driving Performance in Persons with Mild Senile Dementia of the Alzheimer Type," *Journal of the American Geriatrics Society* 41, no. 7 (July 1993): 747–753.

<sup>11</sup>Hunt, "Drivers with Dementia and Outcomes of Becoming Lost while Driving."

<sup>12</sup>Ibid.

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