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Missing Incidents in Persons with Alzheimer's Disease:

Current Research and Search Strategies

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About three hours after I [Todd L'Herrou] arrived on the scene and my trained searchers had entered the field, Team Charlie was on the radio, requesting that the other teams be sure that their radios could not be overheard. "Uh oh," I thought, "the news won't be good." Sure enough, the next message was that a body had been found in a ditch that ran under a hedgerow. The body fit the description officers had obtained from the caregivers for a missing individual with Alzheimer's disease more than 24 hours earlier. Only a quarter-mile from his nursing home, all evidence suggested that the individual had crawled in the ditch not long after he left the home. On another occasion, a search that lasted more than two weeks was initiated for a 79-year-old man with Alzheimer's disease. This consumed large amounts of manpower and logistical support. The man was eventually found deceased only one-half mile from his home.

Alzheimer's disease (AD) is the most common disease that causes dementia, a syndrome characterized by progressive loss of memory, executive function, language, and judgment. The Alzheimer's Association estimates that there are currently more than 5.4 million persons with AD and project that number to double by 2050.[1] On average, persons with AD 65 years and older live between four and eight years after diagnosis, and up to 80 percent of them will have one or more missing incidents.[2]

The deficits in memory, executive function, and judgment that occur in AD and other dementias make affected individuals particularly susceptible to missing incidents and being unable to safely return to caregivers. Once lost, these deficits result in confusion, an inability to be aware of where they are or find their way even in familiar places, an inability to remember their names and addresses, and the tendency to make judgment errors that cause them to enter unsafe situations that may lead to their deaths. The deficits also cause individuals to act very differently when they become separated from their caregivers or become lost. For instance, some lost persons with AD will enter secluded natural areas such as woods and remain there until they die. The previously familiar uniform of a police officer may now be unrecognizable to them, and individuals will not seek their help or recognize an officer as a helpful individual. Once people with AD are missing, it is often up to Good Samaritans to recognize that they need help or for law enforcement agencies to conduct intensive searches to find them.

Officers encounter persons with AD routinely in situations such as assisting confused motorists and pedestrians; aiding caregivers struggling with difficult or aggressive cases; and, thousands of times each year, responding to calls for lost or missing individuals. In recent years, important progress has been made—many departments now correctly categorize these cases not as "missing persons" but as "endangered individuals." Recent research can offer insight into how best to handle these situations and provide the evidence to indicate that those not found quickly are very likely to be found dead.

Over the past 10 years, Rowe and her research team have conducted a series of seven studies that have yielded some important information for law enforcement; this information is summarized below. The decisions, actions, and ability to seek help for individuals with AD are severely flawed, and different search techniques are critical to locate these individuals rapidly. Following are some key areas of interest to note during a search for a missing AD individual.

Unusual Behaviors when Lost

First and foremost, individuals with AD behave very differently after they become lost. The most striking differences are

- they do not ask for help, often not even realizing that they are lost;
- they do not respond to searchers, even those who are in very close proximity and calling their names;
- some will seclude or hide themselves and remain secluded until they are found or they die of exposure;
- there is an inability to problem solve even in the most familiar environments; and
- when found, they will often act as if nothing is wrong and will attempt to hide the fact that they are lost or confused.

Locations Most Often Found

Among those who leave on foot (more than 90 percent of cases), the large majority will continue to walk in the community close to the place last seen (PLS). Almost 90 percent will be found within a five-mile radius, with about 40 percent found within one mile of the PLS.[3] The locations the individuals are most often found in descending frequency, are

- their own neighborhoods;
- standing, sitting, or walking down streets or highways;
- in businesses; and
- in health-care institutions.

These results highlight the importance of both a community notification system, such as reverse 9-1-1, and of driving patrols within a five-mile radius of the PLS. While most of the individuals were found during daylight hours, about one-fourth is found during the night, underscoring the importance of continuing the search during the nighttime hours, particularly with driving patrols.

Seclusion in Natural and Difficult-to-Find Areas

There is a tendency for some individuals to seclude themselves in unpredictable and dangerous ways. For reasons researchers do not completely understand, a small subset

of those who are missing decide to hide or seclude themselves in areas that would be unusual for an older adult to go. Most often, for just under 90 percent of individuals in the study, this was in natural areas such as the woods, fields, ditches, ravines, or parks. In urban settings, locations included abandoned structures, roofs, and closets. Once in these locations, individuals often further conceal themselves by covering themselves or crawling into tight spaces of cover such as bushes in natural areas or vents in building structures. Generally, they remain secluded until found or until they die of exposure. This behavior is associated with a high death rate; more than two-thirds of these individuals died, usually as a result of exposure or drowning. Those dying by exposure can potentially be saved if found earlier. It is critical to include these areas in a comprehensive search strategy, as detailed later on in the article.

Rapid Succumbence to Drowning and Exposure

A rapid and quickly escalating search strategy is required, as 50 percent of those not found within 24 hours will be found dead.[4] After five to six days, almost all will be found dead unless they received some help, for instance as a John or Jane Doe in a hospital. The most effective search strategy by far is searching on foot; research has repeatedly demonstrated that the large majority of these individuals are found either by a walking Good Samaritan or searcher. Although helicopters and search dogs are frequently used, they are rarely responsible for a discovery. Helicopters are most successful immediately after the person is missing and is still discoverable with heat-seeking technology, as an older adult will cool quickly. Most typically, helicopter searchers find individuals who have drowned in a body of water.

Good Samaritans: An Important Adjunct to the Search

Good Samaritans are critical in assisting persons with AD who are lost in the community; they find about 40 percent of these missing individuals.[5] These include passersby who are concerned, as well as businessmen and postal workers.[6] Again, a community notification alert can facilitate the activity in this important group.

Dispelling Search Myths

Two myths that are commonly heard regarding searches for persons with dementia are to search in the direction of the handedness of the lost individual (that is, toward the right for right handers) and to identify barriers as persons with AD will stop when they reach a barrier and have to turn. Two authors of this article (Meredeth Rowe and Gabriella Polyak) recently conducted a study to test these two hypotheses. If the handedness hypothesis is correct, the majority of cases should be found between 0 degrees and 180 degrees since most individuals are right-handed. However, there was no such pattern.

The shortest path between the PLS and the place found also was mapped, noting the minimum number of turns that had to be made between the two locations. For this analysis, it was assumed that sidewalks and roads would be used for walking in urban areas, as these are most common areas to find a lost person with AD outside of neighborhoods. A turn was counted when a road ended or when another obstruction was encountered (for example, a waterway, a highway with limited access, or buildings such as a mall). On average, the shortest path between the distances required two to three turns with fewer than seven turns being required in about 20 percent of the paths. It is unlikely that the individual took the shortest path, but this technique illustrates that identifying barriers where individuals would get stuck as a locating strategy likely would not be effective.

At times, caregivers predict where the individual might be headed (for example, back to a previous home or a workplace), and searchers may use this to guide the search strategy. In the researchers' experience, this should not guide the overall search as the individual is missing and did not successfully make it to that location and, thus, could be anywhere.

Differences for Those Lost while Driving

Some individuals will become lost while driving, usually on trips that are permitted by the family. Unlike those who walk away, these individuals can be found quite far from home. In an analysis of the Florida Silver Alert database cases, only 40 percent of these individuals were found in the same county as the PLS, and 10 percent were found in a different state. Fewer than one-third were found within 25 miles of the PLS. Additionally, the perception that lost drivers cannot negotiate the purchase of gas was not substantiated and should not be used as a guide on the search radius (that is, how far could the individual get on the gas available in the car?). The Silver Alert was directly responsible for recovering only 21 percent of the individuals; all but two of these individuals were found by law enforcement officers, calling into question the effectiveness of dynamic community messaging to find lost drivers. Unlike those who are lost on foot, few drivers were found by Good Samaritans or business people.

Twenty percent of those found were still driving at the time they were located. Most of those who had stopped driving were found in businesses or in adjacent parking lots. A small percentage returned home independently, and the remaining 13 percent were found in dangerous locations such as in the woods, in fields, on railroad tracks, or walking in a roadway.

Problematic driving in persons with dementia who were the subject of Silver Alerts in Florida included a small number of speeding and moving violations (9 percent) and accidents (4 percent), and there were no reports of injuries to others. Driving off the roadway into a ditch, the woods, or the water occurred in 6 percent of Silver Alert subjects, and a small number asked for directions when lost. Contrary to previously held beliefs, most subjects of Silver Alerts did not run out of gas; this occurred in only 3 percent of the Silver Alerts studied. The implication is that search areas based on the amount of available gas in the car are of questionable value.

There was a 5 percent death rate among Silver Alert cases, a rate 300 times that for other drivers more than 65 years old. Drivers perished either from exposure after getting the vehicle stuck in a remote area, drowning after driving into water, burning to death after catching the car on fire by running the engine after the car became stuck, or suicide. Age, gender, and distance from PLS were not predictors of death.

Compassionate Approach for the Caregiver

Finally, it is critical to work compassionately with the caregiver. The large majority of missing individuals become lost conducting normal, independent activities, such as taking walks, being out in the community with a caregiver, or being at home with a caregiver. Generally, the caregiver saw the lost individual fewer than 10 minutes before the incident. Almost always, becoming lost is a function of the deficits resulting from the dementia and not poor care or neglect. In cases of a safe return to the caregiver, it is important that law enforcement assist the caregiver in identifying resources that might help, such as the Project Lifesaver and MedicAlert + Safe Return programs, as well as resources through the local Alzheimer's Association chapters.

What Does This Mean for the Responding Officer?

First, recognize that these incidents are true emergencies, as 50 percent of those not found with 24 hours will perish.[7] Search efforts for the lost person with AD should be initiated immediately. Foremost, it is critical to find individuals before they enter secluded areas where it is difficult to search and death is likely. In particular, while interviewing and investigative tasks are important, as is a search of the subject's current residence, *these should not delay the initial search efforts.*

The initial search should extend one mile from the PLS. In particular, all accessible areas within a one-mile radius should be

searched, with most areas requiring a rapid foot search. This includes around nearby houses; inside easily accessible buildings; and a quick search of streets, highways, and footpaths. Take steps to ensure that a familiar person will be in the residence in the event of a successful find or return and that the primary caregiver can be reached by phone during the search. A community notification bulletin should be considered early in the search rather than later.

If the search efforts in the one-mile radius are not productive, quick search activities should be expanded out to a maximum five-mile radius from the PLS. These efforts should continue to include driving and walking patrols in nearby neighborhoods, roadways, and walkways. Community notification alerts and media involvement should be considered, as almost 40 percent of lost persons with AD are found by Good Samaritans.

During this extended search, a more intensive search of natural areas within a one-mile radius of the PLS should be planned. Almost 90 percent of the time, persons with AD who died while lost were found within one mile of the place last seen. Trained ground-sweep teams can begin to search these areas as soon as they arrive and can include trained dog teams (both air scent and tracking when possible), if rapidly available. These teams should be assigned in separate sectors according to a comprehensive plan. Ensure that teams search the woods, brush, fields, the water, and abandoned spaces such as cars and buildings, taking into account the unusual behaviors of lost persons with AD. Search teams cannot assume that an older person would not go into an area because it is dense or difficult. There have been many searches that have located a person in just such unreasonable areas. Properly document all search activities to ensure that all areas have been searched, keep track of which areas remain unsearched, and provide a record for postincident review.

It is critical to plan the search so that every inch of natural area has been inspected visually or on foot because these individuals are known to hide effectively. In the authors' research and search experience, when the body of a lost AD person was eventually discovered, it was almost always in an area where searchers had been but had not found the individual. The authors are aware of one search in which the subject was eventually found within 100 yards of the individual's residence, in a portion of the yard where a dog was chained. Searchers avoided the barking dog and therefore overlooked the missing subject.

An example of a successful search using techniques based on the research occurred in November 2003. A man with AD became lost after wandering away from his caregivers while on a bicycle ride. He had been missing for six days when Meredeth Rowe (coauthor of this article) contacted the law enforcement agency with information regarding specific search techniques for persons with AD. The officer in charge then adjusted his search, planning instead to focus on an intensive search within a one-mile radius of the PLS. One hour after the search began, the individual was found alive lying in a muddy depression covered with leaves. In fact, the locating searcher actually knocked the individual's arm with his foot and then realized the missing individual was under a pile of leaves.

In Florida, Silver Alerts are alerts issued by law enforcement when cognitively impaired individuals become missing while driving a car. Presently, many states have instituted Silver Alert programs, and Congress is considering a national Silver Alert Act. Most critical is that these programs create comprehensive and different policies for searching for persons with AD who become lost while walking or while driving.

Other worries for police officers concern both liability and determination of whether an incident represents elder abuse or neglect. There is relatively little case law regarding liability in search and rescue, and the majority of what exists is applicable primarily to the "rescue" aspects of the incident; in other words, what happens after the subject is found. For the "search" component of the incident, protection against a successful lawsuit is provided largely by performing the search according to accepted standards, including consideration of the search area as outlined above—with, of course, suitable documentation.

Missing incidents occur most frequently as a result of the disease process and do not commonly represent a problem with the caregiving situation. Factors that may indicate abuse or neglect include

- repeated lost incidents,
- long time lags before reporting the lost individual,
- a lack of effort to find the individual, and
- no caregiver to accept the individual once found.

Conclusion

Because the risk of death is high and the behaviors of lost persons with AD are so unusual, it is critical to begin a search for the individual as soon as possible. This can be accomplished by adopting a policy specific to missing persons with AD and with regular law enforcement education. ❖

Resources

The Alzheimer's Association has information on Alzheimer's disease and the Safe Return program at http://www.alz.org.

The Alzheimer's Foundation of America has information on tracking and locating technologies at http://www.alzfdn.org.

The National Association for Search and Rescue's resource database can assist you in locating SAR resources in your area. Its website is http://www.nasar.org, and its phone number is 703-222-6277.

The Air Force Rescue Coordination Center is the national clearinghouse for search and rescue activity. It can provide access to federal resources, as well as direct you to local SAR resources. Its website is http://www.1af.acc.af.mil/units/afrcc, and its phone number is 800-851-3051.

The International Association of Chiefs of Police has undertaken a specific project called the Missing Alzheimer's Disease Patient Initiative. Information is available at http://www.theiacp.org/alzheimers.

Notes:

[1]"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/1552-5260/PIIS1552526011000367.pdf (accessed September 26, 2011).

[2]Tony Hope et al., "Wandering in Dementia: A Longitudinal Study," *International Psychogeriatrics* 13, no. 2 (2001): 137–147.

[3]Meredeth A. Rowe and Judith C. Glover, "Antecedents, Descriptions, and Consequences of Wandering in Cognitively-Impaired Adults and the Safe Return (SR) Program," *American Journal of Alzheimer's Disease and Other Dementias* 16, no. 6 (November/December 2001): 344–352, http://con.ufl.edu/dementia/ajadop166nd01.pdf (accessed September 26, 2011); and Meredeth A. Rowe et al., "Persons with Dementia Missing in the Community: Is It Wandering or Something Unique?" *BMC Geriatrics* 11 (2011): 28, http://www.biomedcentral.com/content/pdf/1471-2318-11-28.pdf (accessed September 26, 2011).

[4]Rowe et al., "Persons with Dementia Missing in the Community: Is It Wandering or Something Unique?"

[5]Rowe and Glover, "Antecedents, Descriptions, and Consequences of Wandering in Cognitively-Impaired Adults and the Safe Return (SR) Program."

[6]Mary Elizabeth Bowen et al., "Prevalence of and Antecedents to Dementia-Related Missing Incidents in the Community," *Dementia and Geriatric Cognitive Disorders* 31, no. 6 (2011): 406–412.

[7]Rowe et al., "Persons with Dementia Missing in the Community: Is It Wandering or Something Unique?"; Bowen et al., "Prevalence of and Antecedents to Dementia-Related Missing Incidents in the Community."; and Robert J. Koester, "The Lost Alzheimer's and Related Disorders Search Subject: New Research and Perspectives," in Response 98 NASAR Proceedings (Chantilly, Va.: National Association for Search and Rescue, 1998), 165–181.

http://www.naylornetwork.com/iac-nxt