



# Alzheimer's Gains Fuel Optimism

*While researchers are closing in on risk factors, Congress introduces legislation to double Alzheimer's funding.*

**S**OON AFTER FORMER PRESIDENT Ronald Reagan died of Alzheimer's-related complications June 5, bipartisan groups of lawmakers in both the House and Senate introduced identical bills that would more than double the money allocated to the National Institute on Aging for Alzheimer's research. The new level of funding—\$1.4 billion—would take effect in the fiscal year beginning Oct. 1. The bill would also provide a \$3,000 annual tax credit for family caregivers of Alzheimer's patients and a tax deduction for premiums on long term care insurance.

Lawmakers described the bills as “a living memorial” to Reagan, whose public battle with the disease since 1994—along with the untiring advocacy of his wife, Nancy Reagan—has been credited with removing much of the stigma previously associated with dementia and creating a much greater public awareness of the disease's prevalence.

The additional money could result in rapid progress toward greatly improved treatment of the disease, say some experts. “We will cure Alzheimer's disease as quickly as you want us to,” John Trojanowski, director of the University of Pennsylvania's Alzheimer's Disease Center, told the *Washington Post*. “The limiting step is not knowledge, but resources.”

## Researching The Cause

A hallmark of Alzheimer's disease is abnormal clumps of beta-amyloid protein, often referred to as “plaque,” on the outside of brain cells and the

buildup of tangled proteins on the inside. The plaque buildup impedes the transmission of information across synapses—gaps between neurons—affecting a patient's memory and ability to learn. The number and condition of synapses affected determine the severity of the condition.

The reason for the plaque buildup is still being investigated. It may be due to an abnormal overproduction of beta-amyloid or because of a failure in the body's ability to clear them away.

The problem may have its roots in genetic changes in the aging brain, according to a new study published in the journal, *Nature*. Genes linked to the aging of the brain begin to change around age 40, and many of them affect synaptic functioning, the researchers found.

Harvard researchers examined the frontal lobes of 30 people whose age at death ranged from 26 to 106. The frontal lobe controls cognitive functions such as the ability to organize and plan, make judgments, and analyze data. By placing portions of the frontal lobes in lab dishes and then adding thousands of genetic markers, the researchers could identify the genes that had been active at the time of death.

Generally, they found that after age 40, genes that govern neurotransmitters become less active, while genes that repair brain proteins and damaged genes, and that protect against free radicals, begin to work much harder.

However, the rate at which people's brains age can differ significantly, findings showed. A 50-year-old brain

sometimes had the genetic activity of someone much younger—or much older.

## Researching Risk Factors

People with diabetes have a 65 percent increased risk of developing Alzheimer's disease, according to the latest findings from the Religious Orders Study, a long-term study of more than 1,000 nuns and priests.

Of the 824 nuns and priests who had been participating since the study began nine years ago, 151 have been diagnosed with Alzheimer's; 31 of those had previously been diagnosed with diabetes.

To try to elucidate the link between the two diseases, participants underwent neuropsychological testing at Chicago's Rush University Medical Center. The testing focused on five cognitive systems often impaired by Alzheimer's. All participants who had diabetes—but not dementia—scored lower on all five tests.

The five cognitive systems tested included three forms of memory—episodic (specific life events), semantic (general knowledge), and working (ability to retain and rearrange knowledge)—as well as the speed with which an individual can make simple comparisons, such as whether two sets of numbers are the same and the ability to recognize spatial patterns.

Although the exact role that diabetes may play in the development of Alzheimer's isn't clear, some researchers postulate that diabetes-related metabolic changes may affect arteries in the brain and promote

plaque buildup. In addition, diabetes is already a known risk factor for stroke, which can cause some forms of dementia; insulin levels can affect memory; and some research appears to indicate that being overweight—a risk factor for diabetes—may also have a negative affect on cognitive function in later life.

Over the next 40 years, Hispanics in particular will see an astounding 600 percent increase in their risk for developing Alzheimer's or other dementias—a far greater increase than for any other ethnic group, according to a new report from the Alzheimer's Association.

That's due in part to a projection that Hispanics' life expectancy will increase more than any other ethnic group—to 87 by 2050. By that time, Hispanics will make up 16 percent of the elderly population; currently, they comprise only 5 percent. And the number of Hispanics with dementia

will rise from 200,000 today to about 1.3 million in 2050, the report said.

Age is the single greatest risk factor for dementia, according to the Alzheimer's Association, but Hispanics have high rates of other known risk factors as well, including heart attacks, strokes, and diabetes. In addition, they are less likely to have health insurance than non-Hispanics, and so are less likely to receive the routine services and monitoring that could identify and prevent or control such diseases.

"We must work for more funding, raise awareness among Hispanics about the disease, and inform them about the resources available," Raul Yzaguirre, president of the National Council of La Raza, told Scripps Howard News Service.

### **Diagnosis, Prognosis**

A new method of testing for Alzheimer's disease, when combined with clinical assessment, appears to

increase diagnostic accuracy to nearly 100 percent, according to researchers at the University of Texas (UT) Southwestern Medical Center in Dallas, whose findings were published recently in the *Journal of Nuclear Medicine*.

Alzheimer's disease can be difficult to distinguish diagnostically from the frontotemporal dementias, which comprise the second-leading cause of dementia in the elderly. Incorrect diagnosis can result in inappropriate treatment. But the new testing method appears able to ensure accurate diagnosis in difficult cases, according to lead researcher Frederick Bronte, MD, director of the Nuclear Medicine Center at UT.

Researchers used single-photon, emission-computed tomography to produce a three-dimensional picture of the volume of blood flow in a region of the brain that helps process geographical information and vocabulary stored

elsewhere in the brain. Patients with poor blood flow in this part of the brain—the posterior cingulate cortex—proved 16 times more likely to have Alzheimer’s disease than one of the frontotemporal dementias, researchers found.

Shrinkage in the hippocampus and parietal cortex, which can be seen with the use of magnetic resonance imaging, is also an important indicator of Alzheimer’s, Bronte noted.

“The prospects are quite hopeful now that effective treatments for Alzheimer’s disease—and possibly a cure—will emerge in the not-too-distant future,” said Bronte. “This makes it even more important to find out who really has Alzheimer’s disease and is, therefore, eligible for treatment and who has one of the other dementing diseases for which these new treatments would be ineffective.”

But in the here and now, patients, families, and providers need better

prognostic tools so that decisions about care can be based on better information and so that those whose life expectancy is less than six months can, if they wish, receive hospice care covered by Medicare.

A recent study in the *Journal of the American Medical Association* proposes such a tool.

“Accurately estimating the life expectancy of persons with advanced dementia is difficult,” writes Susan Mitchell, MD, the study’s lead researcher. “Prognostic information is important in guiding end-of-life decision making and for determining hospice eligibility.”

#### **Life Expectancy Tool Created**

Minimum data set (MDS) information on 11,300 patients with advanced dementia in New York and Michigan nursing facilities—about 30 percent of whom died within six months of admission—was analyzed by

researchers from Harvard Medical School and Beth Israel Deaconess Medical Center.

Findings identified a life-expectancy-prognosis model consisting of 12 variables. The more of these variables a patient had, the more likely he or she would die within six months.

The 12 variables identified were 1.) activities of daily living score of 28; 2.) male gender; 3.) cancer; 4.) need for oxygen therapy; 5.) congestive heart failure; 6.) shortness of breath; 7.) eating 25 percent or less of the food at most meals; 8.) unstable condition; 9.) bowel incontinence; 10.) bedfast state; 11.) over age 83; and 12.) sleeping most of the day.

“Our risk score offers an improvement over existing prognostic guidelines used in this population,” the authors write, “because it is based on empiric data, has greater predictive power, and uses standardized and readily available MDS information.” ■