

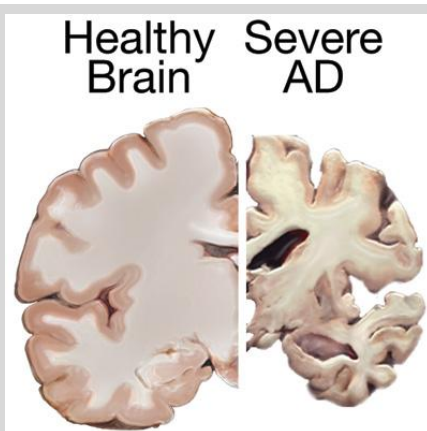
Alzheimer's Disease



Yesterday

- Dementia, or “senility,” was regarded as a normal part of aging. Though Alzheimer’s disease brain abnormalities were first described by Dr. Alois Alzheimer in 1906, the notion of Alzheimer’s dementia as a distinct disease was only just being recognized.
- There were no preventive measures, treatments, or diagnostic tests. Risk factors were unknown. There were no advocacy groups supporting families and patients.
- The NIH’s National Institute on Aging was nascent, having been established by Congress in 1974 to address through research the special needs and issues of older people, including age-related diseases such as Alzheimer’s.

Today



Neuronal cell loss leading to extensive shrinkage in an Alzheimer’s brain (right), as compared to a nondemented, healthy human brain (left).
Courtesy NIA.

- Estimates of how many people in the United States currently have Alzheimer’s disease vary, but experts suggest that between 2.6 million and 5.1 million Americans aged 65 years and older may suffer from the disease, with annual costs estimated to exceed

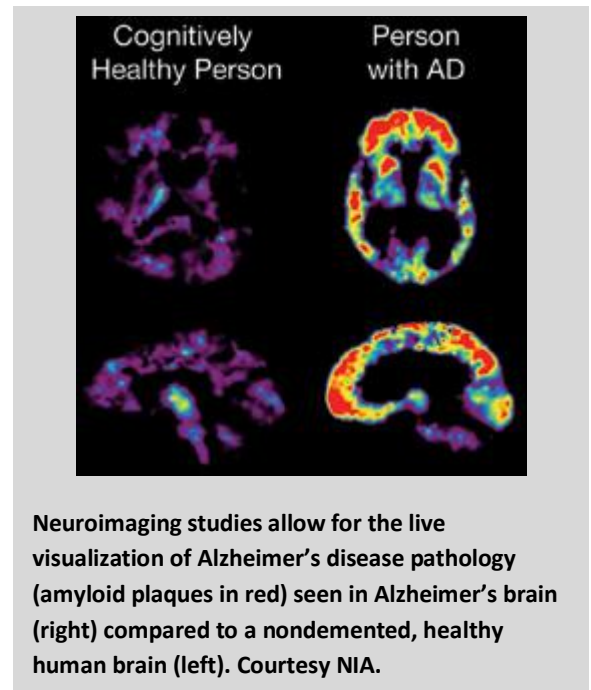
\$100 billion. With age as the biggest risk factor for Alzheimer’s, health officials estimate that due to the aging of the population, its prevalence could triple by 2050 if interventions are not found.

- Several genes have been shown to affect development of late-onset Alzheimer’s disease (the more common form of the disease), and the search is underway through the Alzheimer’s Disease Genetics Initiative for others suspected of playing a role (<http://www.nia.nih.gov/ResearchInformation/ExtramuralPrograms/NeuroscienceOfAging/ProgramInitiatives/ADGI.htm>).
- Basic and genetic studies describe some of the processes involved in Alzheimer’s, revealing numerous targets for new drug development. They shed light on why toxic molecules build up in the brain and lead to the plaques and tangles characteristic of Alzheimer’s, and how brain cell signaling systems affecting memory are disrupted.
- Researchers are studying early stages in the disease process to discover potential prevention strategies and to better identify those who will benefit the most from new therapies as they become available.
- A focus on translating scientific discoveries into practical applications is helping develop newly discovered therapeutic targets into drugs for clinical trials (<http://www.nia.nih.gov/NewsAndEvents/SOAR/v2n2/DiscoveryInnovation/translational.htm>).
- Researchers are currently evaluating many interventions in clinical trials for their potential ability to slow the progression of Alzheimer’s disease. Many of these trials are being conducted at NIH-supported Alzheimer’s Disease Research Centers (<http://www.nia.nih.gov/Alzheimers/ResearchInformation/ResearchCenters/>) across the nation. Researchers at these Centers are working to translate research advances into improved diagnosis and care for AD patients while, at the same time, focusing on the program’s long-term goal—finding a way to cure and possibly prevent AD.

- Alzheimer’s also exposes family and friends who serve as caregivers to considerable emotional, physical, or financial stress. An NIH initiative, Resources for Enhancing Alzheimer’s Caregiver Health (REACH) (<http://www.nrepp.samhsa.gov/ViewIntervention.aspx?id=129>), has shown that a personalized intervention consisting of home visits, structured telephone support sessions, and telephone “check-ins” can significantly improve the quality of life for caregivers of people with Alzheimer’s disease.
- The NIH and the Alzheimer’s Association are spearheading a major effort to update the diagnostic criteria for Alzheimer’s disease based on latest scientific advances and standards in Alzheimer’s disease research (http://www.alz.org/research/diagnostic_criteria/). Once validated, the new criteria will help move the field toward earlier detection and medical intervention, and will facilitate more efficient and effective clinical research studies.

Tomorrow

- Investigators are exploring the use of imaging techniques to understand events unfolding in specific regions of the brain in the presymptomatic and very early stages of Alzheimer’s disease and to assess the effectiveness of potential therapeutic strategies. The Alzheimer’s Disease Neuroimaging Initiative (<http://www.adni-info.org/>), a public-private partnership, is facilitating evaluation of imaging techniques and biological markers for early diagnosis of Alzheimer’s disease and increased efficiency in clinical trials.
- Identification of additional pathways that contribute to the development of AD will provide novel avenues for drug targeting.
- A consensus of scientific opinion suggests that early preventive interventions to preserve memory and preempt disease processes will be more effective than efforts to treat later stages of AD. Intervention before damage has occurred will be facilitated by techniques such as neuroimaging to detect pre-symptomatic disease and to monitor the effects of preventive approaches.



- NIH will continue to support clinical trials to determine whether new drugs, physical exercise, or interventions for cardiovascular disease and diabetes could prevent or delay cognitive decline and Alzheimer’s disease.

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National Institute on Aging (NIA):
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Alzheimer’s Disease Education and Referral (ADEAR) Center: <http://www.nia.nih.gov/Alzheimers/>