

Fact Sheet

Alzheimer's Disease

Thirty Years Ago

- Dementia, or “senility,” was still 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.
- A focus on translating scientific discoveries into practical applications is helping develop newly discovered therapeutic targets into drugs for clinical trials.
- Researchers are currently evaluating many interventions in clinical trials for their potential ability to slow the progression of Alzheimer’s disease.
- Alzheimer’s not only robs individuals of cognition, memory, and language, but it 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), studies interventions for caregivers.

Today

- Approximately 4.5 million Americans suffer from Alzheimer’s 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.
- Four genes have been shown conclusively to affect development of Alzheimer’s, and the search is underway for others suspected of playing a role.
- 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.

Tomorrow

The NIH is poised to make major discoveries to *predict* Alzheimer’s disease, to *personalize* individual treatments, and to use this information to *preempt* disease.

- *Predicting Alzheimer’s disease.* 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, a public-private partnership, is designed to facilitate evaluation of imaging techniques and biological markers for early diagnosis of Alzheimer’s disease and increased efficiency in clinical trials.
- *Personalized treatments.* Scientists are engaged in research that could lead to personalized treatments. This research will lead to a better understanding of the interactions among complex factors affecting how Alzheimer’s progresses differently in individuals. Genetic risk factors, molecular pathways that affect

Alzheimer's development, drug metabolism, as well as lifestyle and environment can all influence the course of disease in an individual.

- *Preemptive approaches.* 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. Early preemption will be facilitated by techniques such as neuroimaging to detect pre-symptomatic disease and to monitor the effects of preventive approaches. Clinical trials will be conducted to determine whether new drugs, physical exercise, or interventions for cardiovascular disease and diabetes could prevent or delay cognitive decline and Alzheimer's disease.