

Alzheimer's disease

Alzheimer's (*AHLZ-high-merz*) disease is a progressive brain disorder that gradually destroys a person's memory and ability to learn, reason, make judgments, communicate and carry out daily activities. As Alzheimer's progresses, individuals may also experience changes in personality and behavior, such as anxiety, suspiciousness or agitation, as well as delusions or hallucinations.

In late stages of the disease, individuals need help with dressing, personal hygiene, eating and other basic functions. People with Alzheimer's die an average of eight years after first experiencing symptoms, but the duration of the disease can vary from three to 20 years.

Although there is currently no cure for Alzheimer's, new treatments are on the horizon as a result of accelerating insight into the biology of the disease. Research has also shown that effective care and support can improve quality of life for individuals and their caregivers over the course of the disease from diagnosis to the end of life.

Causes of Alzheimer's disease

Alzheimer's disease has no known single cause, but in the last 15 years scientists have learned a great deal about factors that may play a role.

Late-onset Alzheimer's, which chiefly affects individuals over age 65, is the more common form of the illness that is most often associated with the term "Alzheimer's disease." The greatest known risk factors for late-onset Alzheimer's are increasing age and a family history of the disease. The likelihood of developing late-onset Alzheimer's approximately doubles every five years after age 65. By age 85, the risk reaches nearly 50 percent. Scientists have so far discovered one gene that increases risk for late-onset disease.

Rare, familial types of Alzheimer's found in a few hundred families worldwide have been linked to specific genes. Individuals who inherit these genes are virtually certain to

develop the disease, usually before age 65, and sometimes as early as their 30s or 40s.

Researchers are working to discover other factors that affect Alzheimer risk. Some of the most exciting preliminary evidence suggests that strategies for general healthy aging may also help reduce the risk of developing Alzheimer's. These measures include controlling blood pressure, weight and cholesterol levels; exercising both body and mind; and staying socially active.

How Alzheimer's disease affects the brain

Scientists believe that whatever triggers Alzheimer's begins to damage the brain years before symptoms appear. When symptoms emerge, nerve cells that process, store and retrieve information have already begun to degenerate and die. Scientists regard two abnormal microscopic structures called "plaques" and "tangles" as the hallmarks of Alzheimer's disease. Amyloid plaques (*AM-uh-loyd plaks*) are clumps of protein fragments that accumulate outside of the brain's nerve cells. Tangles are twisted strands of another protein that form inside brain cells. Scientists have not yet determined the exact role that plaques and tangles may play.

Diagnosing Alzheimer's disease

Although Alzheimer symptoms can vary widely, the first problem that many people notice is forgetfulness severe enough to affect performance at home, at work or in favorite activities. Sometimes the decline in memory may be more obvious to a family member or close friend than to the affected individual. Other common symptoms include confusion, getting lost in familiar places and difficulty with language. The Alzheimer's Association encourages everyone who notices these symptoms in themselves or someone close to them to consult a physician.

A skilled physician can diagnose Alzheimer's disease with 90 percent accuracy. Because there is no single test for

Alzheimer's, diagnosis usually involves a thorough medical history and physical examination as well as tests to assess memory and the overall function of the mind and nervous system. The physician may ask a family member or close friend about any noticeable change in the individual's memory or thinking skills.

Most diagnostic uncertainty arises from occasional difficulty distinguishing Alzheimer's disease from a related disorder.

Alzheimer's is the leading cause of dementia, a group of conditions that all gradually destroy brain cells and lead to progressive decline in mental function. Vascular dementia, another common form, results from reduced blood flow to the brain's nerve cells. In some cases, Alzheimer's disease and vascular dementia can occur together in a condition called "mixed dementia." Other causes of dementia include frontotemporal dementia, dementia with Lewy bodies, Creutzfeldt-Jakob disease and Parkinson's disease.

One important goal of the diagnostic workup is to determine whether symptoms may be due to a condition other than dementia. Depression, medication side effects, certain thyroid conditions, excess use of alcohol and nutritional imbalances are all potentially treatable disorders that may sometimes impair memory or other mental functions. Even if the diagnosis is dementia, timely identification enables individuals to take an active role in treatment decisions and planning for the future.

Treating Alzheimer's disease

Alzheimer medications approved by the U.S. Food and Drug Administration (FDA) may temporarily delay memory decline for some individuals, but none of the currently approved drugs is known to stop the underlying degeneration of brain cells. Certain drugs approved to treat other illnesses may sometimes help with the emotional and behavioral symptoms of Alzheimer's.

One important part of treatment is supportive care that helps individuals and their families come to terms with the diagnosis; obtain information and advice about treatment options; and maximize quality of life through the course of the illness.

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Impact on caregivers

Alzheimer's has a major impact on those who help care for an affected individual. More than 70 percent of people with Alzheimer's live at home, where family and friends provide most of their care. As the disease progresses, it places physical, emotional and financial stress on caregivers as they assume growing responsibilities that may include meeting physical needs, managing daily routines and making important medical and legal decisions.

Impact on society

Alzheimer's takes an enormous toll on society. The Alzheimer's Association and National Institute on Aging estimate that current direct and indirect costs of caring for the 4.5 million Americans with Alzheimer's disease are at least \$100 billion annually. By 2030, when our entire baby boom generation is over 65, the number of Americans with Alzheimer's will soar to levels that may exceed our ability to absorb the added cost.

Hope for the future

As the pace of research accelerates, scientists funded by the Alzheimer's Association, the pharmaceutical industry, universities and our federal government have gained detailed understanding of basic disease processes at work in the Alzheimer brain. Experts believe that several of these processes may offer promising targets for a new generation of treatments to prevent, slow or even reverse damage to nerve cells. Many experts are also convinced that ongoing research will soon clarify the role of cardiovascular factors or other aspects of risk that individuals may be able to influence through lifestyle. A strategy to delay the onset of Alzheimer's by five years could halve the number of affected individuals over the next 50 years.

For more information about Alzheimer research, treatment and supportive care, please contact the Alzheimer's Association.

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