

Alzheimer's Association Report  
2018 Alzheimer's disease facts and figures

Alzheimer's Association\*

**Abstract**

This article describes the public health impact of Alzheimer's disease (AD), including incidence and prevalence, mortality and morbidity, costs of care, and the overall impact on caregivers and society. The Special Report examines the benefits of diagnosing Alzheimer's earlier in the disease process, in the stage of mild cognitive impairment due to Alzheimer's disease. An estimated 5.7 million Americans have Alzheimer's dementia. By mid-century, the number of people living with Alzheimer's dementia in the United States is projected to grow to 13.8 million, fueled in large part by the aging baby boom generation. In 2015, official death certificates recorded 110,561 deaths from AD, making AD the sixth leading cause of death in the United States and the fifth leading cause of death in Americans age  $\geq 65$  years. Between 2000 and 2015, deaths resulting from stroke, heart disease, and prostate cancer decreased, whereas deaths from AD increased 123%. In 2017, more than 16 million family members and other unpaid caregivers provided an estimated 18.4 billion hours of care to people with Alzheimer's or other dementias. This care is valued at more than \$232 billion, but its costs extend to family caregivers' increased risk for emotional distress and negative mental and physical health outcomes. Average per-person Medicare payments for services to beneficiaries age  $\geq 65$  years with Alzheimer's or other dementias are more than three times as great as payments for beneficiaries without these conditions, and Medicaid payments are more than 23 times as great. Total payments in 2018 for health care, long-term care and hospice services for people age  $\geq 65$  years with dementia are estimated to be \$277 billion. With the identification of AD biomarkers in recent years, our understanding of the disease has moved from one based on symptoms to one based on brain changes. Because these changes begin well before clinical symptoms arise, Alzheimer's has the potential to be diagnosed before the dementia stage. Early diagnosis of AD could have important personal and financial benefits. A mathematical model estimates that early and accurate diagnosis could save up to \$7.9 trillion in medical and care costs.

**Keywords:**

Alzheimer's disease; Alzheimer's dementia; Dementia; Diagnostic criteria; Risk factors; Prevalence; Incidence; Mortality; Morbidity; Caregivers; Family caregiver; Spouse caregiver; Health care professional; Health care costs; Health care expenditures; Long-term care costs; Medicare spending; Medicaid spending; Long-term care insurance; Preventable hospitalizations; Biomarker; Early diagnosis; Early detection; Mild cognitive impairment

**1. About this report**

*2018 Alzheimer's Disease Facts and Figures* is a statistical resource for U.S. data related to Alzheimer's disease, the most common cause of dementia. Background and context for interpreting the data are contained in the Overview. Additional sections address prevalence, mortality and morbidity, caregiving, and use and costs of health care and services. A Special

Report discusses the benefits and cost savings of diagnosing Alzheimer's earlier in the disease process, in the stage of mild cognitive impairment (MCI).

*1.1. Specific information in this year's report*

Specific information in this year's *Alzheimer's Disease Facts and Figures* includes:

- Brain changes that occur with Alzheimer's disease.
- Revised guidelines for diagnosing Alzheimer's disease.

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- Number of Americans with Alzheimer's dementia nationally and for each state.
- Proportion of women and men with Alzheimer's and other dementias.
- Lifetime risk for developing Alzheimer's dementia.
- Number of deaths due to Alzheimer's disease nationally and for each state, and death rates by age.
- Number of family caregivers, hours of care provided, and economic value of unpaid care nationally and for each state.
- The impact of caregiving on caregivers.
- National cost of care for individuals with Alzheimer's or other dementias, including costs paid by Medicare and Medicaid and costs paid out of pocket.
- Medicare payments for people with dementia compared with people without dementia.
- Benefits of earlier detection of Alzheimer's disease.
- Cost savings of diagnosing during the earlier MCI stage rather than the dementia stage.

The Appendices detail sources and methods used to derive statistics in this report.

When possible, specific information about Alzheimer's disease is provided; in other cases, the reference may be a more general one of "Alzheimer's or other dementias."

## 1.2. What is "Alzheimer's dementia"?

As discussed in the Overview, under the 1984 diagnostic guidelines, only individuals with symptoms such as significant problems with learning, thinking or memory could receive a diagnosis of Alzheimer's disease. Under the 2011 guidelines, however, individuals could receive a diagnosis of Alzheimer's disease if they had the brain changes of Alzheimer's that precede the onset of symptoms; if they had the subtle symptoms of MCI due to the brain changes of Alzheimer's; and if they had significant problems with learning, thinking or memory (dementia) due to the brain changes of Alzheimer's. The 2011 guidelines build upon research suggesting that Alzheimer's disease encompasses a continuum beginning with the initial brain changes of Alzheimer's that start years before symptoms appear, continuing with years of symptoms that affect cognitive and physical function, and ending with severe Alzheimer's, when brain changes are so extensive that individuals can no longer walk and struggle to communicate. As a result, what was "Alzheimer's disease" under the 1984 guidelines is called "dementia due to Alzheimer's" or "Alzheimer's dementia" under the 2011 guidelines—one stage in the continuum of the disease.

This edition of *Alzheimer's Disease Facts and Figures* reflects this change in understanding and terminology. That is, the term "Alzheimer's disease" is now used only in those instances that refer to the underlying disease or the entire continuum of the disease. The term "Alzheimer's dementia" is used to describe the dementia stage of the continuum. Thus, in most instances where past editions of the report

used "Alzheimer's disease," the current edition uses "Alzheimer's dementia." The data examined are comparable across editions—only the way of describing the affected population has changed.

## 2. Overview of Alzheimer's disease

Alzheimer's disease is a degenerative brain disease and the most common cause of dementia [1,2]. Dementia is a syndrome—a group of symptoms—that has a number of causes. The characteristic symptoms of dementia are difficulties with memory, language, problem-solving and other cognitive skills that affect a person's ability to perform everyday activities. These difficulties occur because nerve cells (neurons) in parts of the brain involved in cognitive function have been damaged or destroyed. In Alzheimer's disease, neurons in other parts of the brain are eventually damaged or destroyed as well, including those that enable a person to carry out basic bodily functions such as walking and swallowing. People in the final stages of the disease are bed-bound and require around-the-clock care. Alzheimer's disease is ultimately fatal.

### 2.1. Dementia

When an individual has symptoms of dementia, a physician will conduct tests to identify the cause. Different causes of dementia are associated with distinct symptom patterns and brain abnormalities, as described in [Table 1](#). Studies show that many people with dementia symptoms have brain abnormalities associated with more than one cause of dementia [3–7]. For example, studies report that about half of people who had the brain changes of Alzheimer's dementia on autopsy also had the brain changes of a second cause of dementia, most commonly vascular dementia [4,5]. This is called mixed dementia.

In some cases, individuals have dementia-like symptoms without the progressive brain changes of Alzheimer's or other degenerative brain diseases. Common causes of dementia-like symptoms are depression, delirium, side effects from medications, thyroid problems, certain vitamin deficiencies and excessive use of alcohol. Unlike Alzheimer's and other brain diseases, these conditions often may be reversed with treatment.

### 2.2. Alzheimer's disease

Alzheimer's disease was first described in 1906, but about 70 years passed before it was recognized as a common cause of dementia and a major cause of death [8]. Only then did Alzheimer's disease become a significant focus of research. The research that followed has revealed a great deal, including the fact that Alzheimer's disease begins years before the symptoms of Alzheimer's dementia are present. Much is yet to be discovered about the precise biological changes of Alzheimer's disease that lead to the symptoms

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