alzheimer's association®

UNDERSTANDING ALZHEIMER'S AND DEMENTIA

Geri T., living with Alzheimer's, and her husband and care partner, Jim

THE IMPACT OF ALZHEIMER'S AND DEMENTIA

Currently, an estimated 50 million people worldwide are living with dementia, including more than 5 million Americans. Barring any developments in prevention or treatment methods, this number is projected to reach nearly 14 million by 2050.

The disease also affects the 16 million Americans who provide unpaid care for people living with Alzheimer's or another dementia. More than 80 percent of care provided at home is delivered by family members, friends or other unpaid caregivers.

The Alzheimer's Association® is available in communities nationwide and online to help individuals and families understand Alzheimer's and dementia, navigate the disease and receive reliable information and support.

CONTENTS

1. ALZHEIMER'S AND DEMENTIA

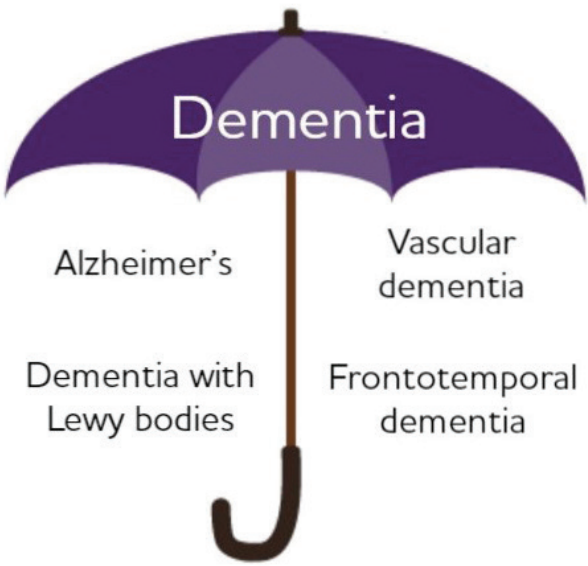
The terms "dementia" and "Alzheimer's" are often used interchangeably. While they are related, there are distinct differences between the two.

Dementia

Dementia is the umbrella term for an individual's changes in memory, thinking or reasoning. There are many possible causes of dementia, including Alzheimer's.

Alzheimer's

Alzheimer's disease is the most common cause of dementia, accounting for 60 to 80 percent of all dementia cases. Alzheimer's is not a normal part of aging — it is a progressive brain disease. Two abnormal brain structures called plaques and tangles are the hallmarks of Alzheimer's disease, and are thought to damage and kill nerve cells. Plaques are deposits of a protein fragment called beta-amyloid that build up in the spaces between nerve cells. Tangles are twisted fibers of another protein called tau that build up inside cells.



Other common dementias

- **Vascular dementia** is a decline in thinking skills caused by conditions that block or reduce blood flow to the brain, depriving brain cells of vital oxygen and nutrients. These changes sometimes occur suddenly following strokes that block major brain blood vessels. It is widely considered the second most common cause of dementia after Alzheimer's disease.
- **Dementia with Lewy bodies** is a type of progressive dementia associated with abnormal deposits of the protein alpha-synuclein that damage brain cells. Early symptoms include hallucinations and problems with sleep.
- **Frontotemporal dementia (FTD)** is a group of disorders caused by progressive cell degeneration in the brain's frontal lobes (the areas behind the forehead) or its temporal lobes (the regions behind the ears).

Visit **alz.org/dementia** to learn about additional types of dementia.

John W., living with dementia with Lewy bodies, and his wife and care partner, Gail

2. ALZHEIMER'S IN THE BRAIN

More than 100 years ago, Dr. Alois Alzheimer described specific changes in the brain that are now known as beta-amyloid plaques and tau tangles. Today we know that Alzheimer's is a progressive brain disease that's marked by these key changes and thought to impact memory, thinking and behavior.

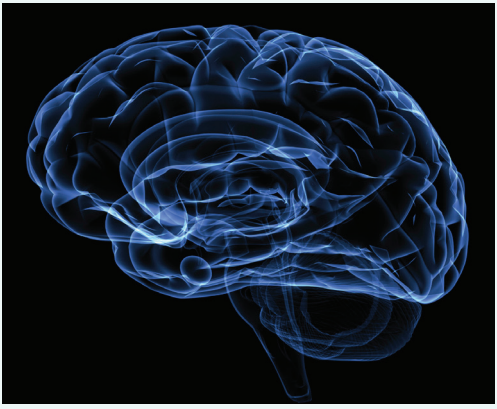
What goes wrong in the brain

The brain has three main parts: the cerebrum, cerebellum and brain stem. Each one plays a role in how the body functions.

The cerebrum fills up most of the skull. It's the part of the brain most involved in remembering, problem-solving and thinking. There are about 100 billion nerve cells (neurons) throughout the brain that transmit messages in order for us to create memories, feelings and thoughts.

Alzheimer's disease causes nerve cells to die, which leads to brain tissue loss, or shrinkage,

TAKE A CLOSER LOOK



Visit **alz.org/brain** to explore *Inside the Brain: A Tour of How the Mind Works*.

and causes loss of function and communication between cells. These changes can cause the symptoms of Alzheimer's disease, such as memory loss; problems with thinking and planning; behavioral issues; and, in the last stage, a further decline in functioning, which can even include difficulty swallowing.

3. RISK FACTORS

While scientists know that Alzheimer's disease involves the failure of nerve cells, it's still unknown why this happens. However, they have identified certain risk factors that increase the likelihood of developing Alzheimer's.

Age

The greatest known risk factor for Alzheimer's is increasing age. After age 65, an individual's risk of developing the disease doubles every five years. Thirty-two percent of people age 85 or older have Alzheimer's.

Family history

Research has shown that those who have a parent, brother or sister with Alzheimer's are more likely to develop it than individuals who do not. The risk increases if more than one family member has the disease.

Genetics

Two categories of genes influence whether a person develops a disease: risk genes and deterministic genes. Risk genes increase the likelihood of developing a disease but do not guarantee it will happen. Deterministic genes cause a disease, meaning anyone who inherits one will develop a disorder.

Rare deterministic genes cause Alzheimer's in a few hundred extended families worldwide.

These genes are estimated to account for less than 1 percent of cases. Individuals with these genes usually develop symptoms in their 40s or 50s.

Hispanics, African Americans and women

Research shows that older Hispanics are about one-and-a-half times as likely as older whites to have Alzheimer's and other dementias, while older African Americans are about twice as likely. The reason for these differences is not well understood, but researchers believe that higher rates of vascular disease in these groups may put them at greater risk for Alzheimer's.

Additionally, women live longer than men, making them more likely to develop Alzheimer's. However, longevity and lower death rates can only partially explain this difference. Researchers are exploring how genetic differences may impact disease risk.

Reducing risk of cognitive decline

Age, family history and genetics are all risk factors we can't change. However, research is beginning to reveal clues about other risk factors that we may be able to influence. There appears to be a strong link between serious head injury and future risk of Alzheimer's. It's important to protect your head by buckling your seat belt, wearing a helmet when participating in sports and proofing your home to avoid falls.

Another promising line of research suggests that strategies for overall healthy aging may help keep the brain healthy and may even reduce the risk of cognitive decline. These measures include eating a healthy diet, staying socially active, avoiding tobacco and excess alcohol, and exercising both the body and mind.

Some of the strongest evidence links brain health to heart health. The risk of developing Alzheimer's or vascular dementia appears to be

increased by many conditions that damage the heart and blood vessels. These include heart disease, diabetes, stroke, high blood pressure and high cholesterol.

Based on this research, the Alzheimer's Association offers 10 Ways to Love Your Brain, a collection of tips that can reduce the risk of cognitive decline. Learn more at **alz.org/10ways**.

4. STAGES OF ALZHEIMER'S DISEASE

Alzheimer's typically progresses slowly in three general stages: early, middle and late (sometimes referred to as mild, moderate and severe in a medical context).

The symptoms of Alzheimer's worsen over time, but because the disease affects people in different ways, the rate of progression varies. On average, a person with Alzheimer's may live four to eight years after diagnosis, but can live as long as 20 years, depending on other factors.

The following stages provide an overall idea of how abilities change and should be used as a general guide. Stages may overlap, making it difficult to place a person living with Alzheimer's in a specific stage.

Early-stage Alzheimer's

In the early stage, a person may function independently. Those close to the individual may begin to notice difficulties, including:

- Problems coming up with the right word or name.
- Trouble remembering names when introduced to new people.
- Challenges performing familiar tasks.
- Forgetting material that was just read.
- Getting lost in familiar places.
- Increasing trouble with planning or organizing.

Middle-stage Alzheimer's

Middle-stage Alzheimer's is typically the longest stage and can last for many years. As the disease progresses, the person living with Alzheimer's will require a greater level of care. At this point, symptoms will be noticeable to others and may include:

- Forgetfulness of events or about one's own personal history.
- Feeling frustrated, angry or withdrawn, especially in socially or mentally challenging situations.
- Confusion about where they are or what day it is.
- The need for help choosing proper clothing for the season or occasion.
- Trouble controlling bladder and bowels.
- Changes in sleep patterns, such as sleeping during the day and restlessness at night.
- An increased risk of wandering and becoming lost.

» Personality and behavioral changes, including suspiciousness and delusions or compulsive, repetitive behavior.

Late-stage Alzheimer's

In the final stage of the disease, significant personality changes may occur and extensive help with daily activities and personal care will be required. At this stage, individuals may:

» Lose awareness of recent experiences as well as of their surroundings.

» Experience changes in physical abilities, including walking, sitting and, eventually, swallowing.

» Have greater difficulty communicating.

» Become increasingly vulnerable to infections, especially pneumonia.

5. FDA-APPROVED TREATMENTS FOR SYMPTOMS

Currently, there is no cure for Alzheimer's and no way to stop the underlying death of brain cells. But non-drug treatments and medications may help with both cognitive and behavioral symptoms for a time. It's important to discuss appropriate treatments with your doctor, starting with non-pharmacological options.

Non-drug treatments

Non-drug approaches to managing behavioral symptoms promote physical and emotional comfort. Many of these strategies aim to identify and address needs that the person with Alzheimer's may have difficulty expressing as the disease progresses.

Tips for coping with symptoms include:

- Monitor personal comfort. Check for pain, hunger, thirst, constipation, full bladder, fatigue, infections and skin irritation. Maintain a comfortable room temperature.
- Avoid being confrontational or arguing about facts. For example, if a person would like to visit a parent who died years ago, don't point out that the parent is no longer alive. Instead, say, "Your mother is a wonderful person. I would like to see her, too."
- Redirect the person's attention. Try to remain flexible, patient and supportive by responding to the emotion, not the behavior.
- Create a calm environment. Avoid noise, glare, insecure space and too much background distraction, including television.
- Allow rest between stimulating events.

» Provide a security object.

» Acknowledge and respond to requests.

» Look for reasons behind each behavior. Consult a physician to identify causes related to medications or illness.

» Explore various solutions.

Medications

Three types of drugs are currently approved by the Food and Drug Administration (FDA) to treat cognitive symptoms of Alzheimer's disease.

The first, cholinesterase (KOH-luh-NES-ter-ays) inhibitors, prevents the breakdown of acetylcholine (a-SEA-til-KOH-lean), a chemical messenger important for memory and learning. By keeping levels of acetylcholine high, these drugs support communication among nerve cells. Three cholinesterase inhibitors commonly prescribed are:

» Donepezil (Aricept®)

» Rivastigmine (Exelon®)

» Galantamine (Razadyne®)

The second type of drug works by regulating the activity of glutamate, a different chemical messenger involved in information processing:

» Memantine (Namenda®)

The third type is a combination of a cholinesterase inhibitor and a glutamate regulator:

» Donepezil and memantine (Namzaric®)

Cholinesterase inhibitors

Glutamate modulators

Combination of cholinesterase inhibitors and glutamate modulators

The effectiveness of these treatments varies from person to person. While they may temporarily help symptoms, they do not slow or stop the brain changes that cause Alzheimer's to become more severe over time.

6. ADVANCING ALZHEIMER'S RESEARCH

Research advancements in the last decade have helped us better understand the disease as a continuum, meaning that the biological changes associated with Alzheimer's develop many years before symptoms appear. This sets the stage for possible prevention of the disease, because once we have the tools to identify at-risk individuals early and the medications to treat them, we will be able to intervene and stop or slow the progression of the disease.

To ensure that the effort to advance the understanding of Alzheimer's disease and find better treatments receives the focus it deserves, the Alzheimer's Association funds researchers looking at new treatment strategies and advocates for more federal research funding.

Clinical studies drive progress

Participating in a clinical study is one way that everyone can get involved, in a very direct way, in the fight against Alzheimer's disease. Without clinical research and the help of human volunteers, scientists will not be able to discover methods of prevention, treatment and, ultimately, a cure.

Clinical trials test new drugs for their safety and effectiveness. *Clinical studies* test non-drug interventions for their impact on factors such as improving quality of life. Every clinical trial or study contributes valuable knowledge, regardless if favorable results are achieved.

For people currently living with dementia, there are some additional benefits to participating in clinical trials, including access to very close medical care and promising treatments.

Visit **alz.org/TrialMatch** to learn more about **Alzheimer's Association TrialMatch®**, a free, easy-to-use clinical studies matching service for individuals living with dementia, caregivers and healthy volunteers without dementia. TrialMatch, and its database with hundreds of studies taking place across the country and online, is your opportunity to learn about current Alzheimer's research opportunities.

alz.org

Access reliable information and resources, such as:

- Alzheimer's Navigator® – Assess your needs and create customized action plans.
- Community Resource Finder – Find resources, including your local Association chapter.
- ALZConnected® – Connect with other caregivers or people with dementia.
- Online Caregiver Resources – Get information for all stages of the disease.

alz.org/education

Free online workshops, including:

- *Understanding Alzheimer's and Dementia*

800.272.3900

24/7 Helpline – Available all day, every day.

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The Alzheimer's Association is the leading voluntary health organization in Alzheimer's care, support and research. Our mission is to eliminate Alzheimer's disease through the advancement of research; to provide and enhance care and support for all affected; and to reduce the risk of dementia through the promotion of brain health.

Our vision is a world without Alzheimer's disease®.

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