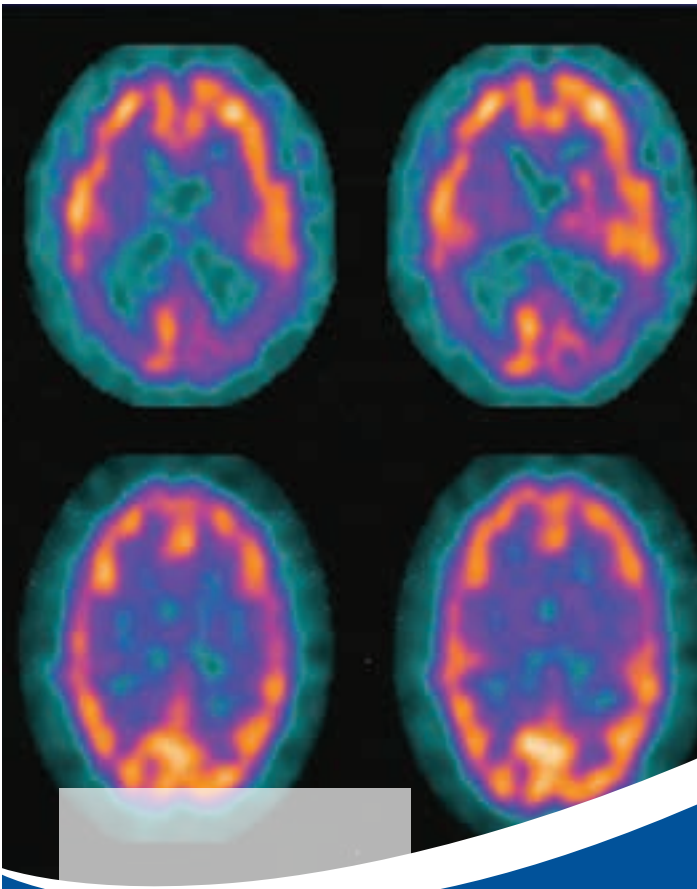
Alzheimer Society

Alzheimer's disease

What is Alzheimer's disease?

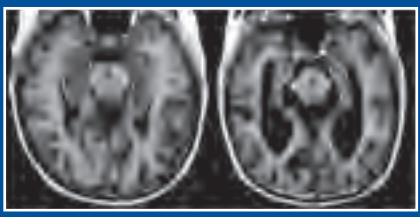


Forget Me Not

Ne m'oubliez pas

What we know about dementia and Alzheimer's disease

Alzheimer's disease is the most common of a large group of disorders known as "dementias." It is an irreversible disease of the brain in which the progressive degeneration of brain cells causes thinking ability and memory to deteriorate. Alzheimer's disease also affects behaviour, mood and emotions, and the ability to perform daily living activities.



The image above is a cross section of two brains, one of a person with Alzheimer's disease (right) and one without (left). It shows a person with Alzheimer's disease has less brain tissue (right) than the person who does not have the disease (left).

The disease was first identified by Dr. Alois Alzheimer in 1906. He described the two hallmarks of the disease:

- **"Plaques"** (numerous microscopic dense deposits scattered throughout the brain). These plaques are largely made of a protein called "beta amyloid," or A-beta. When A-beta molecules accumulate and stick together, it is toxic to brain cells.
- **"Tangles"** inside nerve cells. These fibrous clumps interfere with vital processes eventually "choking" off the living cells. As well, when brain cells degenerate and die, the brain markedly shrinks in some regions.

As Alzheimer's disease progresses and affects different areas of the brain, various abilities and behaviours become impaired. Once an ability is lost, it is not known to return. However, research is now suggesting that some relearning, and even some recovery of memory, may be possible.

Forms of Alzheimer's disease

Familial Alzheimer's disease (FAD)

A small percentage of people with Alzheimer's disease (< 5%) have Familial Alzheimer's disease or FAD (formerly known as "early onset Alzheimer's disease"). At some point in their family history certain genes mutated and developed the abnormal characteristics that cause FAD. These inherited genes have a powerful influence. If one parent has FAD, each child has a 50% chance of inheriting the disease, and with two parents with FAD, 75% of their children will go on to develop Alzheimer's disease in adulthood. These inherited genes differentiate FAD from the more common sporadic form of Alzheimer's disease, but the disease itself is nearly identical.

Sporadic Alzheimer's disease

The sporadic form of Alzheimer's disease (which used to be called "late onset Alzheimer's disease"), was formerly assumed to have no family linkages. Now we know that a person with a direct relative (parent or sibling) with Alzheimer's disease has a three times greater chance of developing the disease than someone who does not[1]. The risk increases further if both parents have the disease. So aside from the FAD-related genes, there are other Alzheimer's disease-related genetic factors shared by family members.

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[1] Here is a useful way of looking at the relative risk: of 100 people with no defined genetic risk factor, five will get Alzheimer's disease at age 65 (and 95 will not). Of 100 people, each with a parent with Alzheimer's disease, 15 will get Alzheimer's disease at age 65 (and 85 will not).

The effects of Alzheimer's disease

Alzheimer's disease is a fatal disease that eventually affects all aspects of a person's life: how they think, feel, and act. Each person is affected differently. It is difficult to predict which symptoms he will have, the order in which they will appear, or the speed of their progression. Early signs that may signal the onset of Alzheimer's disease include the loss of sense of smell, and loss of weight. The following are some of the changes you may expect as the disease progresses.

Cognitive and functional abilities

A person's ability to understand, think, remember and communicate will be affected. The ability to make decisions will be reduced. Simple tasks that have been performed for years will become more difficult or be forgotten. Confusion and memory loss, initially for recent events and eventually for long-term events, will occur. The ability to find the right words and follow a conversation will be affected. Sometimes people lose their way, even when walking in familiar surroundings. The very earliest of these cognitive changes often occur a few years before dementia is actually diagnosed. These early changes are known as "Mild Cognitive Impairment" (MCI); however MCI does not always progress to Alzheimer's disease.

Emotions and moods

A person may appear apathetic and lose interest in favourite hobbies. Some people become less expressive and withdrawn. Even in the later stages, however, a person may still feel joy, anger, fear, love and sadness.

Behaviour
Changes will develop in the way the person reacts to the environment. These reactions may seem out of character. Some common reactions include repeating the same action or words, hiding possessions, physical outbursts and restlessness.

Physical abilities
The disease can affect a person's physical coordination and mobility, leading to a gradual physical decline. This will affect her ability to independently perform day-to-day tasks such as eating, bathing and getting dressed.

Research, treatment and strategies

It may take years for the sick nerve cells in the brain to die. During that period treatments can help the affected nerve cells to maintain their communication with other nerve cells. It is the loss of this communication that causes the first symptoms of Alzheimer's disease to appear.

Significant advances in these treatments can have an impact on an individual's day-to-day life. Several medications now available can help with symptoms such as decline in memory, language, thinking abilities and motor skills.

Earlier diagnosis can mean that these treatments are started in the early stages, and improve the quality of life for many people.

Clinical trials are now underway to identify ways to prevent and treat dementia, such as through drugs, vaccines, and addressing cardiovascular and lifestyle factors.

New behavioural therapeutic strategies are also helping people living with the disease. Therapeutic techniques like physical activity and music are viable and useful treatments. Research shows that the quality of life of people with Alzheimer's disease, and also their caregivers, is significantly improved by activities that emphasize their strengths and abilities. By understanding the personality, life experiences, support systems and ways of coping, a person-centred approach to care can preserve and improve quality of life.

What is our current understanding of risk factors?

Alzheimer's disease appears to develop when the combined effects of various risk factors cross a certain "threshold," overwhelm the natural self-repair mechanisms in the brain, and reduce the brain's ability to maintain healthy nerve cells. Advancing age is the most significant risk factor for Alzheimer's disease. Other risks factors include genetics, diabetes, Down syndrome, Mild Cognitive Impairment, head injury, low levels of formal education, menopause in women, history of clinical depression, strokes, high cholesterol, high blood pressure, stress, inadequate exercising of the brain and of the body, and finally, obesity.

Living with Alzheimer's disease

Since 1978, the Alzheimer Society has been dedicated to providing help for people with Alzheimer's disease and other dementias and their caregivers.

The Alzheimer Society offers a range of counselling and support groups that provide a safe place to share information, feelings and experiences for both people with the disease and their caregivers.

The Alzheimer Society has developed a number of resources to help people living with the disease, their families and caregivers.

Please contact your local Alzheimer Society to get free information sheets on various aspects of Alzheimer's disease and caregiving and find out what services are offered in your community at 1-800-616-8816 or www.alzheimer.ca.

The Alzheimer Society is Canada's leading nationwide health charity for people living with Alzheimer's disease and other dementias. Active in communities right across Canada, the Society:

- Offers information, support and education programs for people with dementia, their families and caregivers
- Funds research to find a cure and improve the care of people with dementia
- Promotes public education and awareness of Alzheimer's disease and other dementias to ensure people know where to turn for help
- Influences policy and decision-making to address the needs of people with dementia and their caregivers.

For more information, contact your local Alzheimer Society or visit our website at www.alzheimer.ca.

Help for Today. *Hope for Tomorrow…*®

Cover: The scan on the top shows a brain with Alzheimer's disease and the scan on the bottom shows a healthy brain. ECD, SPECT scans were provided by Masanori Ichise, MD FRCPC (Mount Sinai Hospital Toronto/NIH Bethesda MD).

Inside panel: MRI images courtesy of Sunnybrook and Women's College Health Sciences Centre.

Alzheimer *Society*

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