



Institute for Women's Health Research
Putting Women's Health First

January 2011

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Dear Friends,

Recently, *The Shriver Report: A Woman's Nation Takes on Alzheimer's* was released and reveals that two-thirds of all Americans with Alzheimer's Disease are women. A poll cited in the report also found that 60% of the unpaid caregivers of Alzheimer's patients are women, making the impact of this disease on women particularly significant.

This month's e-newsletter will feature some of the current information as well as provide contacts of local resources to help families facing this devastating disease.

The Institute Staff



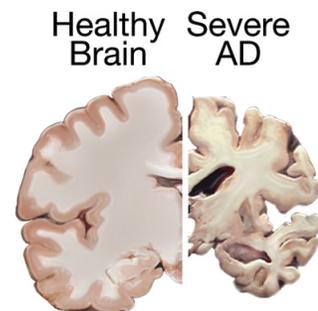
INSTITUTE FOR
WOMEN'S HEALTH
 RESEARCH™
 AT NORTHWESTERN UNIVERSITY

What is Alzheimer's Disease?

Alzheimer's Disease (AD) is an irreversible, progressive brain disease that slowly destroys memory and thinking skills, and eventually even the ability to carry out the simplest tasks. AD is the most common cause of dementia among older people.

We don't know what causes AD, but we know that it develops because of a complex series of events that take place in the brain over a long period of time. It is likely that there are genetic, environmental, and lifestyle factors that are part of the cause and these factors can be different among individuals.

Though we don't know what triggers the disease process, we do know that the damage to the brain may begin 10 to 20 years before any problems are evident. Early studies of the brains of Alzheimer's victims found abnormal clumps (amyloid plaques) and tangled bundles of fibers (neurofibrillary tangles) upon autopsy. Plaques and tangles are two of the main biologic features of AD. The third feature is the loss of connections between the nerve cells (neurons) in the brain. A great deal of research is targeted at learning more about these plaques, tangles and other features of



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Signs and Symptoms

AD is often characterized as mild, moderate or severe depending on the severity of symptoms. The first, early stage is marked by confusion, memory loss and poor judgment. As it progresses to the second stage, the patient demonstrates more anxiety, insomnia and wandering. In severe AD, plaques and tangles have spread throughout the brain and some of the brain tissue has actually shrunk. People with severe AD cannot communicate, may be bed ridden, unable to control bodily functions and totally dependent on a caregiver.

Diagnosing Alzheimer's

Diagnosis begins by excluding treatable causes of cognitive dysfunction, including endocrine and metabolic disorders, vitamin deficiencies, and hydrocephalus. Tests for syphilis and thyroid function are often done because these conditions are often associated with cognitive impairment. CT (computerized axial tomography) and/or MRI (magnetic resonance imaging) scans are being used more often and the emergence of cerebral spinal fluid tests and neuroimaging biomarkers is rapidly changing the approach to dementia diagnosis.

AD can be definitively diagnosed only after death by linking the clinical course with an exam of the brain tissue pathology. Neuropsychological testing remains the most sensitive means of making an early clinical diagnosis. Formal testing by a neuropsychometrist is typical at research centers, but far more informal tools such as those listed below are used by most practitioners:

- Evaluate overall health, past medical problems, ability to carry out daily activities and changes in behavior and personality.
- Conduct tests of memory, problem solving, attention, counting, and language.
- Test blood, urine and spinal fluid (scientists developed ways to measure beta-amyloid levels in CSF).
- Perform brain scans, such as computerized tomography (CT) or magnetic resonance imaging (MRI).

These tests can be repeated over time to give the doctor more information about changes in memory.

When diagnosing AD, it is important to distinguish dementia and delirium or depressive pseudodementia. Some people with memory problems have a condition called amnesic mild cognitive impairment (MCI). These individuals have more memory loss than other people their age, but they are not as severe as in AD. However, people with MCI have a greater risk of developing AD. Brain imaging and biomarker studies of people with MCI and those with a family history of Alzheimer's are beginning to detect early changes in the brain like those seen in AD and more study in this direction is needed. These types of findings offer hope that there may be tools that could help detect AD early, track its course, and monitor response to treatment and lifestyle changes. Because patients are not functionally impaired, this level of cognitive impairment is not recognized by the FDA and no medications have been approved for use in patients with MCI.

Treatment

AD is complicated and no single drug or treatment is likely to prevent or cure it. Current treatment is multifaceted and includes interventions to help maintain mental function (four medications are approved by the FDA: donepezil, rivastigmine, galantamine, and memantine). These drugs work by regulating chemicals that transmit messages between neurons. They may help maintain thinking, memory, speaking skills, and behavior.

Treatment also focuses on managing behavioral symptoms which include sleeplessness, agitation, wandering, anxiety, anger, and depression. Scientists are still trying to learn why these occur and are studying both drug and non-drug interventions.

Several new medications that may slow, delay or prevent the disease are being tested in clinical trials. The hunt for new therapies has focused mainly in two areas: understanding the basic mechanisms underlying the disease and the search for biomarkers of disease progression. Many of the drugs under study are directed toward beta-amyloid and plaque development, nerve cell death, inflammation and insulin resistance

Women and Alzheimer's

The reason the prevalence of AD is higher in women is mainly due to the fact that women live longer (80 vs. 75 years). If we had the same lifespan, women would be affected only slightly more.

Women also have a higher burden of health conditions that may increase the risk of AD. These include obesity, diabetes, high cholesterol, and hypertension.

The prevalence of MCI (described above) which is thought to be a precursor of AD, is higher in men compared to women. This may suggest that women transition directly to AD rather than go thru the MCI phase of the disease but more research is needed.

One study by Kaiser Permanente suggested that the use of hormone replacement in midlife may protect cognitive impairment, whereas HT initiation in late life could have negative effects. The role of HT in delaying AD continues to be the subject of major debate.

There is also some evidence that the history of stroke may be more significant in the progression of AD in men, while depression may be a stronger risk factor in women.

Genetics

The search for genes that influence the risk of AD has proven difficult. No single gene determines that individuals will develop the condition. However, genetics does play a role because having a first degree relative with the disease does increase one's risk. The most well established genetic link is the APOE (apolipoprotein E) gene. APOE genotyping is typically performed for clinical trials and other research studies in the setting of genetic counseling. Many of the major AD advocacy organizations do not favor routine APOE genotyping because the outcome of testing positive is uncertain. A patient may have a variant on the APOE gene and still escape dementia, and those who lack it are still at risk for dementia.

The PCDH11X is another previously unsuspected gene on the X chromosome that is the first to show gender-specific effect. A study conducted at Mayo Clinic (NATURE GENETICS Jan 2010) showed that women who inherited two copies of a variant in this gene (in both X chromosomes) are at considerable risk of developing AD. Women with a variant on only one of their two X chromosomes also had some increased risk, as did men with this variant on their single X chromosome.

Prevention

As researchers continue to search for the cause and cure for AD, there is hope that lifestyle interventions may prevent or delay the onset of Alzheimer's disease. Factors that are controllable that may play a role in AD include: diabetes, smoking after age 65, obesity, chronic stress and heart conditions.

A 2009 review of literature from the *International Journal of Clinical Practice (2009 Feb)* scientists documented that over time, physical activity effectively reduces the probability of AD, other dementias and cognitive impairment. Healthy eating habits are important to reduce inflammation and maintain consistent levels of insulin and blood sugar. Adequate sleep and stress reduction can lower cortisol levels which may hamper cell growth.

Continued brain stimulation helps build brain reserves. Brain reserves are defined as the brain's resilience, its ability to cope with increasing damage while still functioning adequately. Healthy brain reserves may slow the emergence of the clinical manifestations of dementia. See helpful hints section below on some brain power activities.

Serious head trauma, especially if the injury involves loss of consciousness, is linked to AD. Military and sports organizations have begun looking more seriously at head injuries and their long term consequences. Not only are brain injuries due to physical trauma, they can also be chemical (e.g., smoking, alcohol, pesticides). Wearing a helmet during risky sports and avoiding toxic environments are good lifestyle habits.

Economic impact

The economic impact of AD totals about \$300 billion/year according to the Shriver Report. The cost of caring for one person with AD is \$56,900 a year, the bulk of it borne by the family. With the baby boomers entering their mid-60s, an Alzheimer's tsunami is about to hit, with the number of people with AD expected to triple by 2050.

Getting Help

Several resources are available for patients and caregivers on the Northwestern Medical Campus. The Neurobehavior and Mental Health Service provides patient care, support groups and educational programs. They can be reached at 312-695-9627. The [Alzheimer's Disease Center](#) conducts research and clinical trials on AD.

The [Alzheimer's Association](#) and the [National Institute on Aging](#) provide helpful fact sheets and pamphlets.

Sources:

[The Shriver Report: A Woman's Nation Takes on Alzheimer's](#)

[Helpguide.org](#)

[Ann Neurol. 2010 Nov 12](#)

[Alzheimer's Disease May Stem from Protein Clearance Problem](#)

[Nature Genetics Jan 2009](#)

[National Institute on Aging](#)

[International Journal of Clinical Practice](#)

Upcoming Events

January 11, 2011

[Advances in Contraception: Your Choices in Birth Control](#)

Prentice Women's Hospital, Chicago, Illinois

January 18, 2010

[Institute for Women's Health Research Monthly Forum](#)

Diana Kerwin, MD - Risk Factors for Cognitive Decline and Dementia in Women: The relationship between obesity and brain function.

Northwestern Memorial Hospital, Feinberg Pavilion, Chicago, Illinois

January 27, 2011

[Women's Heart Health: Cardiovascular Disease in Women](#)

Prentice Women's Hospital, Chicago, Illinois

February 2, 2011

[Hotflash Havoc - a film of menopausal proportions](#)

Tickets: \$25 includes a parking validation

Northwestern University, Chicago, Illinois

Health Tip: Building Brain Reserves

Here are some brainpower activities to keep your mind sharp.

- Set time each day to learn something new (play an instrument, study a foreign language)
- Memorize something (states and their capitals, a special poem or quotation, U.S. Presidents)
- Work puzzles (crosswords, Suduko, Jumble)
- Learn about a work of art (who, what, where, when, how---look for unique visuals in a painting)
- Vary your habits (eat with your other hand, alter your exercise routine, take a different route to a familiar place).

[Join the Illinois Women's Health Registry](#)

Registry participants number 5600+. We will be launching a Spanish version of the Registry in March of this year! If you have not joined yet, please do, and encourage your family and friends, to [help us advance women's health research!](#)

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