Guide to Understanding Alzheimer's Disease

Special Report

JohnsHopkinsHealthAlerts.com
Guide to Understanding Alzheimer’s Disease

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Alzheimer’s disease, which is named for the German physician who first identified it in 1906, is the most common form of dementia, accounting for 60 to 70 percent of cases. It is a progressive disorder of the brain and is characterized by a gradual deterioration of mental faculties caused by a loss of nerve cells and the connections between them.

The disease is often accompanied by changes in behavior and personality. Its course is relentless and relatively predictable, but the rate of mental decline varies from person to person. A recent study of people identified during a community study found that only half of people with Alzheimer’s survive more than three years after the initial diagnosis, but earlier studies of people diagnosed in doctors’ offices and clinics reported survival times of five to nine years. But some individuals can live for 20 years or more after diagnosis.

Despite tremendous advances in the understanding of Alzheimer’s disease, scientists have yet to pinpoint a true cause of the disorder.

Amyloid plaques and neurofibrillary tangles (which arise from collapsed microtubules, the brain’s internal transport system) are found at autopsy in virtually every patient with Alzheimer’s disease.
The leading theory is that Alzheimer’s disease is caused by an accumulation of insoluble fragments of beta-amyloid. Because these fragments are not dissolved, researchers suspect that this form of beta-amyloid more readily builds up and forms plaques.

**Risk Factors for Alzheimer’s Disease**
Risk factors for Alzheimer’s disease increase the likelihood that an individual will develop the disorder but are not believed to directly cause it. The distinction between risk factors and cause is sometimes unclear because the biology of the disease is not fully understood.

Risk factors for Alzheimer’s include older age, being female, genetic predisposition, the presence of a specific form (ε4) of the gene that makes a protein called apolipoprotein E (APOE), elevated levels of lipoprotein(a) (a type of very-low-density cholesterol), cardiovascular disorders (such as high blood pressure, high cholesterol and heart attack) and Down syndrome. Head injury and depression are other possible risk factors for Alzheimer’s.

**Progression of Alzheimer’s Disease**
Alzheimer’s disease advances slowly through three stages, ranging from mild forgetfulness to severe dementia. In the first stage, symptoms include impaired memory of recent events, faulty judgment and poor insight. People may forget important appointments, recent family events and highly publicized news stories. Other symptoms include losing or misplacing possessions, repetition of questions or statements, and minor or occasional disorientation.

In the second stage, memory problems grow worse and basic self-care skills begin to decline. Patients have trouble expressing themselves verbally or in writing and may be unable to perform everyday activities, such as dressing, bathing, using a knife or fork, or brushing their teeth. They may also suffer from delusions or hallucinations.

In the third stage, almost all reasoning capacity is lost. Individuals become completely dependent on others for their care. The disorder eventually becomes so debilitating that most patients cannot walk or feed themselves and become susceptible to other diseases. Lung and urinary tract infections are common. Pneumonia is the most common cause of death among Alzheimer’s patients.
Is It Normal Aging or Something More Serious?
Diagnosing Alzheimer’s Disease

The Alzheimer’s Association lists 10 warning signs that may signal Alzheimer’s. A person who has difficulty in one or more of these areas should be evaluated:

- Memory loss that disrupts daily life
- Challenges in planning or solving problems
- Difficulty completing familiar tasks at home, at work or at leisure
- Confusion with time or place
- Trouble understanding visual images and spatial relationships
- New problems with words in speaking or writing
- Misplacing things and losing the ability to retrace steps
- Decreased or poor judgment
- Withdrawal from work or social activities
- Changes in mood and personality

For now, only an autopsy can definitively prove the presence of Alzheimer’s disease, but the clinical diagnosis is usually accurate. The current approach to establishing the cause of memory loss involves ruling out some potential causes and finding evidence to confirm the presence of others. Once other conditions, such as depression, Huntington’s disease or hypothyroidism, have been ruled out, the diagnosis of Alzheimer’s is made by accumulating information on the individual’s history and mental status exams and by interviews with the patient, family members and friends over a period of several weeks. Diagnoses based on this type of clinical information are accurate about 90 percent of the time.

According to the Diagnostic and Statistical Manual of Mental Disorders, a diagnosis of Alzheimer’s disease requires the presence of memory impairment and at least one other cognitive deficit that is severe enough to affect social or job functioning (such as difficulty communicating). Also, the decline must be gradual. Laboratory and imaging studies can provide information needed to diagnose many non-Alzheimer’s dementias.

Home screening tests for Alzheimer’s disease are available. However, the Alzheimer’s Association advises against using them because they may cause psychological distress, and they are not able to predict if a patient does not have dementia.

**Laboratory Tests**
Two laboratory tests, called the ADmark Assays, can aid in the diagnosis of Alzheimer’s disease. One of these assays measures beta-amyloid and tau protein in the cerebrospinal fluid (and therefore requires a spinal tap). Its use is currently discouraged because its accuracy is equiv-
alent to that of a careful clinical evaluation, which should be conducted anyway.

The second test identifies which variation of APOE the person carries. The test assesses the probability that a person’s dementia stems from Alzheimer’s disease on the basis of whether the APOE ε4 variation is present. The test is not definitive because some individuals with this allele will never develop Alzheimer’s. This test is not part of a routine evaluation of people with dementia.

Imaging Studies
CT and MRI scans are used to examine brain structure and function and to rule out other possible causes of mental impairment. A CT scan uses an X-ray method that makes hundreds of images while rotating 360 degrees around the area that is being studied. A computer processes these images to produce two-dimensional, cross-sectional images of the area—like slices from a loaf of bread. This technique can rule out some causes of dementia, such as stroke, brain tumor, brain abscess or hydrocephalus (fluid in the brain). It can also identify enlargement of certain portions of the brain, which may suggest the presence of Alzheimer’s disease.

MRI can also detect some of the structural changes associated with Alzheimer’s disease. Like CT, MRI forms two-dimensional, cross-sectional images of the brain. But MRI relies on a powerful magnet rather than X-rays to capture the images. Because the technique is based on the amount of water in a given tissue, MRI provides a more refined and clearer view of the brain.

A promising development in imaging is a technique called functional MRI that looks not only at the structure of the brain but also at the metabolic processes taking place at the time of the scan. For example, functional MRI can detect changes in brain activity that occur as different areas of the brain are stimulated by tests of, say, memory or mathematical skills.

Why Pursue Diagnosis?
When people notice mental slips and fear dementia, they may be reluctant to push for testing. There is, after all, no cure for Alzheimer’s disease. But a positive diagnosis, while frightening, offers some positive opportunities. Medications can slow the progression of the Alzheimer’s, giving a person more time to enjoy with friends and family. If the disease is caught early enough, it allows people to participate in their own health care decisions. It provides time to prepare psychologically, spiritually and financially for the inevitable consequences of the disease. And it also gives a potential caregiver—typically a family member—more time to obtain the education and training needed to provide a dignified and healthy life for their loved one. The entire diagnostic process may take months, but benefits—as well as sobering challenges—await at the end.
Memory White Paper

A dramatic increase in the number of people affected by Alzheimer’s disease has heightened the urgency of the research into Alzheimer’s and other dementias. The Memory White Paper brings you state-of-the-art information on how to tell the difference between Alzheimer’s and ordinary age-related memory loss, and the best ways to keep your memory sharp as you get older. You will also learn about important new research in identifying, treating and preventing memory disorders, as well as new drugs for Alzheimer’s and other dementias that can help slow memory decline.

The Johns Hopkins Memory Disorders Bulletin

Edited by Dr. Peter V. Rabins, Professor of Psychiatry at the Johns Hopkins University School of Medicine and co-author of The 36-Hour Day, the best-selling guide for caregivers. The Johns Hopkins Memory Disorders Bulletin brings timely information for anyone facing Alzheimer’s disease, dementia or another memory problem. In each quarterly issue, you’ll read about the latest scientific breakthroughs and research findings from the foremost medical journals and conferences—on diagnosis, medications, caregiver support and relief, how to safeguard your brain against memory loss and many other issues. Subscribe today at the special web-only discount and get 4 FREE special reports.

Diagnosing and Treating Alzheimer’s Disease

Written by Dr. Peter V. Rabins, director of the Division of Geriatric and Neuropsychiatry at the Johns Hopkins School of Medicine and Medical Editor of the Johns Hopkins Memory Disorders Bulletin. This in-depth report is an indispensable resource for anyone concerned about the memory-robbing disorder that affects millions. Dr. Rabins provides all the facts you need to make informed decisions if you have to confront Alzheimer’s disease. You’ll learn about the risk factors for Alzheimer’s, arguments for and against screening, simple diagnostic tests, laboratory tests and brain scans, the existing drugs that are used to treat Alzheimer’s, the newest investigational therapies, treating depression in Alzheimer’s patients, and more.

Caring for a Loved One with Alzheimer’s Disease: A Guide for the Home Caregiver

Written by two world-renowned Alzheimer’s specialists, Dr. Peter Rabins and Dr. Ann Morrison, this practical 134-page guide provides detailed advice on how to successfully manage your day-to-day responsibilities—to your patient and to yourself. Chapters include: When It’s Time to Take Away the Car Keys, Personal Care, Dealing with Alzheimer’s Troubling Behavior Problems, Deciding on Residential Care.

For more information, or to order, go to: JohnsHopkinsHealthAlerts.com/bookstore
The information contained in this Special Report is not intended as a substitute for the advice of a physician. Readers who suspect they may have specific medical problems should consult a physician about any suggestions made.

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