

an Ounce of Prevention

ALZHEIMER'S PREVENTION THROUGH DELAY

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PREVENTION HIGHLIGHT

What Causes Alzheimer's Disease?

Alzheimer's disease (AD) is largely due to the buildup in the brain of a molecule called beta amyloid. The buildup of beta amyloid occurs both inside and outside of nerve cells. Inside nerve cells, beta amyloid twists their framework into a dense, tangled mess. Imagine what would happen by twisting the wrought-iron framework of the Eiffel Tower! The twisted framework inside nerve cells makes it hard for them to maintain their stability and communicate with each other, and ultimately destroys them. These twisted frameworks are called neurofibrillary tangles of AD. Outside nerve cells, beta amyloid builds up in neuritic plaques, which are cellular junkyards filled up with broken-down cell parts. These neuritic plaques act like magnets to attract growing nerve fibers that are attempting to reconnect to other nerve cells to repair damaged connections. Nerve fibers growing into neuritic plaques create short-circuits that have no function. As the number of short-circuits build up, brain function worsens.

There are many diseases that increase beta amyloid production and are considered risk factors for AD. These include heart disease, high blood pressure, high cholesterol and diabetes. Each of these diseases approximately doubles an individual's chance of becoming demented due to AD or stroke. Although some risk factors such as age, genetic disposition or an individual's family medical history cannot be modified, many diseases can be controlled through prevention or effective treatment. These include:

Heart Disease increases your risk for becoming demented due to stroke , and is usually due to:

- Clogged blood vessels in the heart (coronary artery disease)
- Irregular beating of the heart (atrial fibrillation)
- A weak heart muscle (congestive heart disease)
- Leaky heart valves (valvular heart disease)

High Blood Pressure increases your risk for becoming demented due to Alzheimer's disease and stroke. High blood pressure is defined as anything above 140/85 mm Hg, but ideally should be near 120/80 mm Hg. High blood pressure is usually due to hardening of the arteries caused by:

- High Cholesterol
- Diabetes
- Diet high in salt or saturated fat
- Kidney Disease
- Genetic factors

High Cholesterol increases your risk for becoming demented due to Alzheimer's disease and stroke. High cholesterol occurs when your liver produces too much of the bad cholesterol (LDL cholesterol greater than 100 mg/dl, total cholesterol greater than 200 mg/dl, or triglycerides greater than 150 mg/dl), or too little of the good cholesterol (HDL below 45 mg/dl). The bad cholesterol builds up in your blood vessel walls, hardens them to cause high blood pressure and hemorrhage, and narrows them to block blood flow and cause stroke. High total cholesterol, high triglycerides, high LDL cholesterol, and low HDL cholesterol are risk factors for:

- Dementia due to Alzheimer's disease because high LDL or low HDL cholesterol increases beta amyloid production
- Dementia due to small or large strokes
- Heart Disease
- High Blood Pressure

Diabetes increases your risk for becoming demented due to Alzheimer's disease or stroke. Diabetes develops when your body's insulin stops tightly controlling your fat and sugar levels. You are more likely to develop diabetes if you eat foods high in refined sugar (sweets, soda pop, etc.) or saturated fat (fast foods, butter, cheese, meat with the fat on it, etc.). Diabetes damages almost every organ including the brain. Diabetes also increases your risk for developing:

- Stroke as well as dementia due to large or small strokes
- Heart disease
- High Blood Pressure

RESEARCH UPDATES

Early Hormone Replacement Therapy May Reduce Risk of Dementia

Research from Women's Health Initiative Memory Study links hormone replacement therapy before age 65 to reduced risk of dementia by 46% and Alzheimer's disease by 64%. Victor Henderson, MD, Stanford University in Palo Alto led the study. The results of the study were presented at American Academy of Neurology 59th Annual Meeting.

Two Studies Provide Data on Stroke Rates and Timeliness of Treatment

In the May 18 issue of Morbidity and Mortality Weekly Report, two studies were published about stroke. The first study was conducted by researchers from the Centers for Disease Control and Prevention. Data from the 2005 Behavioral Risk Factor Surveillance System Survey was analyzed. Overall, 2.6% of non-institutionalized adults had history of stroke and the rate was the same for both men and women. Prevalence of stroke increased with age and was .8% for people between age 18 and 44; 8.1% for people 65 years of age and older. American Indians, multiracial persons, and blacks had stroke rates of 4% or more. Whites had a rate of 2.3%. Additionally, the rate of stroke was higher in persons with less than 12 years of education compared with college graduates: 4.4% vs. 1.8%. Connecticut had the lowest rate of 1.5%; Mississippi had the highest rate of 4.3%.

The second study was based on analysis of data from Georgia, Illinois, Massachusetts, and North Carolina. According to the data, only 48% of stroke patients arrived in the emergency room within 2 hours making it difficult to provide the appropriate care. Ambulance transportation was used in 53.4% of the cases and made a difference in the arrival time. 36.2% of non-ambulance patients arrived in 2 hours compared to 56.8% of those transported by ambulance.

High Alcohol Consumption Leads to Accelerated Loss of Brain Volume

Brain volume normally declines with age. In one's 20's, brain volume is typically 100% of the volume of the skull. As the individual ages, brain volume declines on average of .19% per year. New research found that decline in brain volume for each category of drinking: low, moderate and high, was approximately equal to 1 to 2 years of normal aging.

The study was led by Carol Ann Paul from Wellesley College and Boston University School of Public Health, in Massachusetts, and its results were presented at American Academy of Neurology 59th Annual Meeting.

High Intake of Calcium and Vitamin D by Elderly May Cause Brain Lesions

In a recent study, the frequency of calcium and vitamin D intake was assessed and MRI scans were completed on 232 elderly men and women. While all the subjects had some brain lesions, those taking larger amounts of calcium and vitamin D were more likely to have higher total brain lesions. However, researchers could not conclude that calcium or vitamin D caused the brain lesions and called for further studies. This study was conducted by Dr. Martha E. Payne of Duke University, Durham, North Carolina and results were presented at a meeting of the American Society for Nutrition in Washington, DC.

Moderate Alcohol Intake May Slow Progression from Mild Cognitive Impairment to Dementia

Researchers have found that patients with mild cognitive impairment who consume one or less drinks per day, developed dementia at a slower rate than those who abstained. More specifically, the progression to dementia was at an 85% slower rate. Wine accounted for 75% of the alcohol intake; beer, 2%; superalcoholic beverages 22.1%. The study was led by Vincenzo Solfrizzi, MD, PhD and Francesco Panza, MD, PhD at the University of Bari in Italy and the results were published in Neurology magazine.