# an Ounce of Prevention

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# PREVENTION HIGHLIGHT

## An Active Plan For Preventing Dementia Due to Alzheimer's Disease and Stroke

### The Memory Loss of Normal Aging Versus Alzheimer's Disease

After age 40, you may have noticed having greater difficulty remembering people's names or recent conversations or events. Have you wondered:

1. Is my forgetfulness just aging or am I getting Alzheimer's Disease?
2. How do I tell the difference?
3. What causes Alzheimer's disease?
4. How can I prevent or delay dementia due to Alzheimer's disease or stroke?
5. What can I do about it if it is Alzheimer's disease or stroke?

There are clear answers to these questions that can make the difference between living a full life or being in a nursing home. Read on.

**Question 1: Is my forgetfulness just aging or am I getting Alzheimer's Disease or something similar? With normal aging, your attention span, or working memory, declines. With Alzheimer's disease and many other conditions, a different kind of memory, called short-term memory, declines early on.**

- Working memory is the scratch pad in your brain that allows you to follow a conversation, enjoy a movie, read a book, think through a thought, or finish a difficult task. If you have ever walked into a room and forgotten why you entered it, you have experienced the decline in working memory with normal aging. Working memory is controlled in the frontal part of your brain and declines with normal aging.

- Short-Term Memory stores recently learned information, such as an interesting comment you heard or an important idea you recently learned for your job. It is like a tape recorder that can replay recently learned information for about two weeks, then self-destructs, like in "Mission Impossible". Anything you remember for more than two weeks passes into long-term memory, which is controlled in a different brain area. Short-term memory is controlled in the temporal lobe on the side of your brain, and declines first in Alzheimer's disease and related disorders.

- Long-Term Memory can store your life's knowledge for as long as you live. People (and their doctors) often think that because they can remember detailed events in their past (more than two weeks ago), that they don't have Alzheimer's disease.

However, Alzheimer's disease does not affect long-term memory until much later in the disease.

**Question 2: How do I tell the difference between memory decline due to normal aging and that due to Alzheimer's disease or something similar?**

- Regular Memory Checkups beginning after age 50 to 65 years old are the way to tell the difference between normal memory loss and Alzheimer's disease or a related condition. Regular memory checkups can assure you that your memory changes are part of normal aging as well as detect problems early when they are most treatable.

Objective tests of mental abilities are used to confirm cognitive impairment as well as to help diagnose its cause. Of the cognitive functions impaired in Alzheimer's Disease, short-term memory loss is one of the first. Therefore tests of short term memory loss can identify Alzheimer's Disease at its earliest stages. Your physician or a recommended neuropsychologist should also be able to conduct professional testing. We also offer a Memory Screening Service, a confidential memory assessment service provided by nurses.

# RESEARCH UPDATES

## Structural Brain Changes Present 4 Years Before Diagnosis of Mild Cognitive Impairment

Charles D. Smith, MD at University of Kentucky Alzheimer's Disease Center (UK-ADC) found that some patients classified as cognitively normal actually had structural brain changes. These structural changes were present on average 4 years before diagnosis of mild cognitive impairment (MCI), a pre-dementia stage. The study included 136 subjects over the age of 65, all cognitively normal, participating in the Biologically Resilient Adults in Neurologic Studies (BRAINS) group, made up of very educated and motivated individuals representing the very healthy extreme. At baseline structural magnetic resonance imaging (MRI) was performed and the subjects were followed for 5 years. Furthermore the subjects underwent annual cognitive testing and semiannual medical examinations. At an average of 5.4 years of follow-up, 23 subjects had developed MCI and 9 of 23 had progressed to AD.

## Type 2 Diabetics Have Increased Risk of Developing Amnestic Mild Cognitive Impairment

Jose J. Luchsinger, MD, from Columbia University Medical Center in New York City studied 918 multiethnic individuals aged 65 years or older without mild cognitive impairment (MCI) or dementia. Baseline data were gathered between 1992 and 1994 and included in-person interview about general health and function, medical history, neurological examinations and neuropsychological testing. The average follow-up period was 6.1 years and participants were assessed every 18 months until 2003. During this period 334 had developed MCI with 160 being amnestic (memory loss related) cases while the remaining 174 non-amnestic. Analysis of data showed that diabetes was related to a significantly higher risk of all-cause MCI and amnestic MCI (8.8%) after adjustment for all covariate. Diabetes was also related to

a higher risk of nonamnestic MCI, but this association was appreciably attenuated after adjustment for socioeconomic variables and vascular risk factors. The risk of MCI attributable to diabetes was 8.8% for the whole sample and was higher for African American persons (8.4%) and Hispanic persons (11.0%) compared with non-Hispanic white persons (4.6%), reflecting the higher prevalence of diabetes in minority populations in the United States.

## Increase in Systolic Blood Pressure Increases Risk of Stroke in All Populations

Data from the Second National Health and Nutrition Examination Survey (NHANES II) Mortality Study was analyzed by Dr. David W. Brown and colleagues from Centers for Disease Control and Prevention in Atlanta, Georgia in an effort to investigate whether various blood pressure parameters helped prevent stroke. The analysis included 3295 men and 3462 women with median follow-up of 15 years. 113 fatal strokes occurred during this time period. The researchers concluded that for every 10 mm Hg increase in systolic blood pressure, the relative risk of stroke was 1.19 for men, 1.15 for women, 1.17 for whites, and 1.28 for African Americans.

## Risk Factors for Stroke in Type 2 Diabetics Identified

Although type 2 diabetes mellitus (DM) is a strong predictor of cerebrovascular disease, few studies have assessed the incidence of stroke and the role of other risk factors in patients with type 2 DM. Italian researchers led by Dr. Carol Bruno Giorda from the Metabolism and Diabetes Unit in Chieri followed, over a 4-year period, 14,432 type 2 DM patients aged 40 to 97 years, with and without cardiovascular disease. The study found that prior history of stroke more than doubled the risk of stroke. Additionally, history of cardiovascular disease also increased risk of stroke as did age. In men without cardiovascular disease, HbA1c and smoking were predictors of stroke. In men with cardiovascular disease, predictors of stroke included: insulin therapy plus oral agents, treatment for high cholesterol, and low HDL cholesterol. In women, the risk factor for stroke that was identified was microvascular complications.

## Fish Oil May Slow Cognitive Decline

Two prospective studies link delay in progression of cognitive decline in elderly to intake of components of fish oils. In the first study, researchers evaluated n-3 highly unsaturated fatty acids (HUFAs), especially eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) and their effect on cognitive decline. Dr. Bouke Maria van Gelder, from National Institute for Public Health and the Environment in Bilthovern and colleagues evaluated data from 210 healthy men in the Zutphen Elderly Study, aged 70 to 89 years old in 1990. The diets of the subjects were assessed in 1990 and cognitive function was tested in 1990 and 1995. At baseline, all subjects had normal mental function and Mini-Mental State Exam (MMSE) scores were similar for all regardless of intake of EPA and DHA. In 1995 those who did not have an intake of EPA and DHA scored on average 1.2 points lower on the MMSE. Those in the lowest tertile of EPA and DHA intake had an average 1.1 lower score than those in the highest tertile. The researchers recommend a daily dietary intake of 400mg of EPA and DHA found in fish, meat, eggs, leeks, and cereal products.

The second study was led by Dr. Mary A. Beydoun, at the University of North Carolina in Chapel Hill. The researchers evaluated the link between concentrations of fatty acids in plasma cholesteryl ester and phospholipids and analyzed data from the Atherosclerosis Risk in Communities (ARIC) study which began in 1987. The study cohort included 2251 subjects aged 50-65 years at baseline. From 1987 through 1989, the Atherosclerosis Risk in Communities (ARIC) Study analyzed plasma fatty acids in cholesteryl esters and phospholipids in whites residing in Minneapolis, MN. From 1990 through 1992 and from 1996 through 1998, 3 neuropsychological tests in the domains of delayed word recall, psychomotor speed, and verbal fluency were administered. Among 2251 subjects, the risk of global cognitive decline increased with elevated palmitic acid in both fractions and with high arachidonic acid and low linoleic acid in cholesteryl esters. Higher HUFAs reduced the risk of decline in verbal fluency, particularly in hypertensive and dyslipidemic subjects. No significant findings were found for psychomotor speed or delayed word recall.