



Preventing
Alzheimer's:
lifestyle
strategies for
keeping the
brain healthy

A person's risk of developing Alzheimer's disease doubles every 5 years after age 65. Health promotion professionals can encourage older clients to incorporate strategies into their daily lives to reduce their risk

by William Rodman Shankle, MD, MS

Mr. Smith, a 75 year-old retired doctor, has been living with Alzheimer's disease for more than 4 years. His days include reading, attending seminars, volunteering in the community and spending time with his grandchildren. Recently, he returned from a 2-week trip to Italy with his wife. Mr. Smith is not this man's real name, but he is a patient of mine.

A highly educated and intelligent individual, Mr. Smith typically reads several books each week. About 4 years ago, he found it difficult to retain the information he read and visited a family doctor, who dismissed his condition as normal aging. After meeting with my future patient, I diagnosed him with early stage Alzheimer's disease.

While the words *Alzheimer's disease* conjure up thoughts of lost independence and time spent in a care facility, the reality can be quite different. With today's approved treatments, disease progression can be delayed for 3 years or longer if an individual is diagnosed and treated in the earliest stages of the disease.¹ And preventive steps taken before the onset of Alzheimer's make more than 7 years of independence possible. This means that people can spend added years at home living independently and eventually take part in their healthcare and end-of-life decisions.

Today, up to 95% of individuals with Alzheimer's are diagnosed in primary care settings in either the moderate or severe stage²—about halfway through the typical 14-year disease course. Such late-stage diagnosis compares to diagnosing diabetes after someone is nearly blind and has kidney failure. Understandably, treatment has limited effectiveness at such a late stage, which has led to the misconception that Alzheimer's is untreatable.

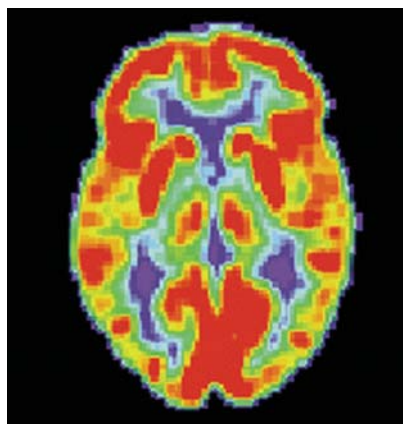


Figure 1. The PET scan of a normal brain

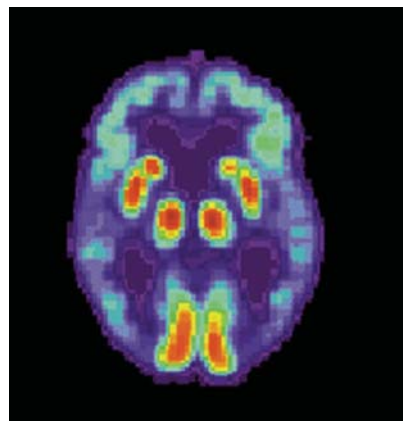


Figure 2. The PET scan of a brain affected by Alzheimer's disease

Images courtesy of the Alzheimer's Disease Education and Referral Center, a service of the National Institute on Aging

While treatment has plenty of room to improve, the lack of early diagnosis and intervention is the greater problem. With the number of people with Alzheimer's disease expected to double and triple in the coming decades, awareness of prevention and early detection can significantly improve the quality of life for up to 20 million Americans.

Detecting Alzheimer's early

Before sharing recent findings in Alzheimer's prevention and treatment, I will define some terms and present an overview of the disease for readers.

Many other conditions can resemble Alzheimer's disease. Examples include multiple strokes, Parkinson's disease, Lewy body disease, alcoholism, depression, many chronic medical conditions, and others. In Alzheimer's, the parts of the brain first affected are the *entorhinal cortex* and the *hippocampus*, the areas responsible for short-term memory—recalling names, numbers, events and conversations learned a few minutes to a few weeks ago. (See page 34 for an illustration outlining brain function and Alzheimer's disease.) At this point, Alzheimer's does not affect well-learned abilities such as paying bills, handling finances, cooking, cleaning, shopping and driving. This initial stage of just short-term memory loss lasts 7 years, and is called mild cognitive impairment (MCI).

A person with MCI may experience difficulty remembering certain things, but not at the level where it affects daily life. At such an early stage, differentiating between normal aging and MCI is a real challenge, but important.

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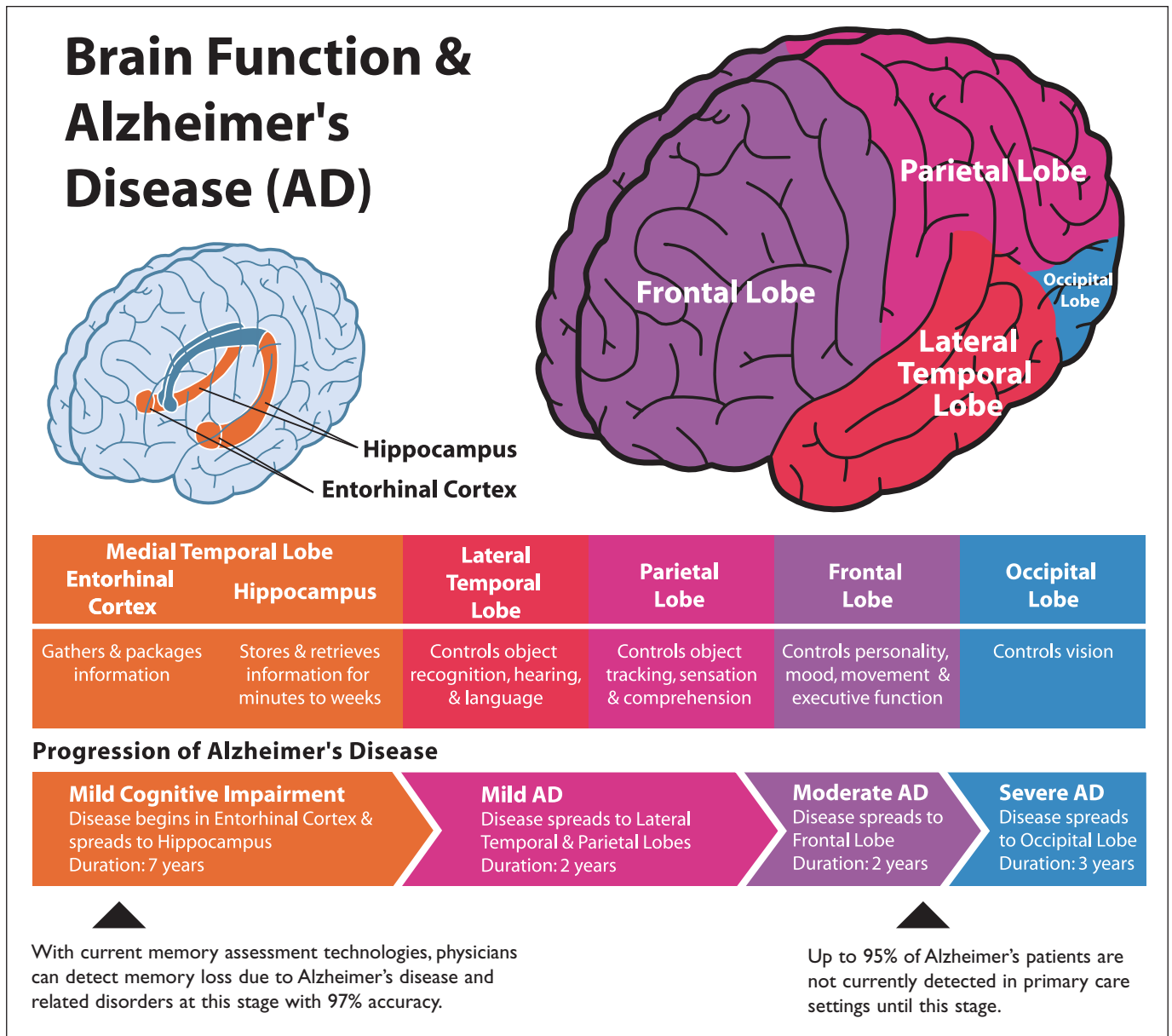


Figure 3. Brain function & Alzheimer's disease (AD). Illustration courtesy of Medical Care Corporation

About 60% of people with MCI develop Alzheimer's disease within 6 years.³ Successfully identifying an individual with MCI will enable his or her doctor to diagnose Alzheimer's disease or other causes of MCI early, when treatment is most effective. With current memory assessment technologies, it is now possible to detect mild cognitive impairment with 97% accuracy.⁴

[Ed. *Journal on Active Aging* readers are invited to try online memory assessment tools at no charge until January 31, 2006, thanks to a special offer from Medical Care Corporation. Turn to page 36 for details.]

Eventually, Alzheimer's spreads to other brain areas to affect different cognitive abilities, including the well-learned

abilities mentioned above. This is the beginning of the disease's dementia stage.

Well-researched and validated preventive measures are available both for delaying the onset of Alzheimer's and for delaying the progression of symptoms once the disease has begun. Also, treatment outcomes are better

when individuals begin treatment at an early stage, such as MCI.

It is crucial for health promotion professionals to help clients identify and manage their risk factors for dementia. By assessing memory as part of a wellness program, professionals can also detect any cognitive changes in clients as soon as they begin and encourage individuals to consult their physicians for evaluation.

Know the risk factors

Scientists have identified many risk factors for Alzheimer's disease and other dementing disorders, such as vascular dementia. While some factors (such as age, race and genetic history) are beyond a person's control, others can be controlled through simple lifestyle changes. It is important for clients to know their risk factors and manage them effectively to protect themselves against these brain disorders. Some risk factors include:

- **Hypertension (high blood pressure).** Hypertension is a major risk factor for Alzheimer's disease, stroke, heart disease and vascular dementia. While hypertension is defined as anything above 140/85 mmHg, it is recommended that blood pressure be near 120/80 mmHg.
- **Hyperlipidemia (high cholesterol).** High total or LDL (low-density lipoprotein) cholesterol heightens an individual's risk not only for Alzheimer's disease, but also for vascular dementia and heart disease. High cholesterol increases production of one of the hallmarks of Alzheimer's disease, *beta amyloid*, and doubles the risk of the disease. Total cholesterol levels over 200 mg/dL should be reduced. Elevated LDL cholesterol is particularly dangerous, so this cholesterol should be kept below 100 mg/dL.

- **Head injury.** A head injury with loss of consciousness does not increase the risk of Alzheimer's *per se*. However, for someone with a genetic risk for Alzheimer's disease (the apolipoprotein E4 gene), a head injury with loss of consciousness multiplies disease risk tenfold.
- **Diabetes.** Diabetes damages almost every organ in the body, including the brain. This condition increases the likelihood of stroke, heart disease and hypertension, all of which elevate the risk for vascular dementia. Diabetes also impairs cognitive functions in people with Alzheimer's disease.
- **Stroke.** A person who has had a stroke has a 6–10 times greater risk of developing vascular dementia than that of the general population. The risk for stroke can be reduced by simple lifestyle modifications, such as lowering blood pressure, stopping smoking, exercising regularly, eating a healthy diet, and treating other stroke risk factors.
- **Lack of exercise.** Researchers show that regular exercise (at least 30 minutes per session, 3 or more times a week) has several health benefits, including lowering risks for cognitive impairment, heart disease, diabetes and stroke.

By carefully managing their controllable risk factors, individuals help improve their brain health and preserve cognitive function as they age.

Preventive strategies to keep the brain healthy

There is significant evidence that certain preventive agents and lifestyle modifications reduce the risk of Alzheimer's disease and other dementing disorders.

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Recommended resources

Internet

Alzheimer's Disease Education and Referral Center (ADEAR)
(a service of the National Institute on Aging)
www.alzheimers.org

This government-funded website provides comprehensive, up-to-date information and materials about Alzheimer's disease.

Leeza's Place
(a program of the Leeza Gibbons Memory Foundation)
www.leezasplace.org

Leeza's Place offers education, activities, support and programming for caregivers and those recently diagnosed with Alzheimer's disease and related disorders.

Alzheimer's Association
www.alz.org

This national nonprofit organization is dedicated to finding ways to prevent, treat, and eventually cure Alzheimer's disease.

PreventAD.com
www.PreventAD.com

This website informs visitors about scientific advances and positive developments in the fight against Alzheimer's.

Print

Preventing Alzheimer's
William Rodman Shankle, MD, MS, and Daniel G. Amen, MD
First published in 2004 by G. P. Putnam's Sons, New York.

Preventing Alzheimer's details "ways to help prevent, detect, diagnose, treat, and even halt Alzheimer's disease and other causes of memory loss." This book can be ordered online from PreventAD.com or major booksellers.

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Some well-studied strategies are introduced below. However, not all of these strategies will benefit every person. Health promotion professionals should encourage clients to consult with their physicians to develop a customized strategy.

Vitamin E. Research shows that vitamin E has preventive effects in delaying Alzheimer's progression, heart attack and stroke. Recently, a 3-year study of 2,889 community residents, ages 65–102 years, found a 36% reduction in the rate of cognitive decline among subjects who took vitamin E (400 iu or higher).⁵ Also, vitamin E at 1,000 iu taken twice daily by people with Alzheimer's disease slowed progression by one year.

Vitamin E is an antioxidant that protects brain cells from being damaged by free-radical formation. This vitamin is usually harmless when taken in doses of 400 iu a day or less. When taken with vitamin C (250–500 mg), vitamin E is absorbed better by the brain.

The form of vitamin E ingested is critical. D-alpha-tocopherol, the most commonly sold form of this vitamin, may actually increase risk of death by 1% in doses of 900 iu daily or higher. The mixed-tocopherol form of vitamin E resembles that found in food, and is much more likely to have preventive benefits. Until proven otherwise, doses of the mixed-tocopherol form of vitamin E should be 800 iu daily or less.

Vitamin C. Vitamin C is a powerful antioxidant. This vitamin recycles vitamin E and other antioxidants, making them even more potent. When taken with other fat-soluble antioxidants (such as vitamin E or R-alpha lipoic acid), vitamin C can do much more to protect brain cells from free-radical damage. A 10-year study shows that high dietary intake of vitamins C and E through fruits and vegetables

reduces the risk of Alzheimer's disease by 20%.⁶

Side effects of vitamin C are rare. Occasionally, this vitamin can cause urinary tract infections due to acidification—the higher the dose, the greater the chance of infections, especially in women. The recommended dose of vitamin C is 500 mg twice a day. The most biologically active forms of this vitamin are either the *esterified* kind or those containing rose hips.

Aspirin. Aspirin is in a class of medications called nonsteroidal anti-inflammatory drugs (NSAIDs). Among its primary effects, aspirin reduces beta amyloid, a hallmark of Alzheimer's; prevents platelets from clotting inside blood vessels; and reduces pain and fever caused by inflammation. Research has shown this medication to have preventive effects on Alzheimer's disease, heart attack, stroke and peripheral vascular diseases. For Alzheimer's disease, 30–55% risk reductions are observed in studies.⁷

Since aspirin increases bleeding risk, people who use it daily should be checked for blood in stool and urine at least once a year by their physicians. Also, it is recommended that aspirin not be taken in addition to other NSAIDs, such as ibuprofen.

Diet. Fruits and vegetables are important components of a healthy diet. Sufficient daily consumption of these foods could help prevent major diseases, including Alzheimer's disease, heart disease and certain cancers.

A recent study⁸ shows that increasing intake of fruits and vegetables to 600 g per day (5–6 servings) could reduce the burden of the diseases mentioned above. The Food and Agriculture Organization of the United Nations and the World Health Organization recommend at least 400 g (3–4 servings) of fruits and vegetables per day (excluding potatoes and other starchy tubers) to prevent chronic diseases. Other diet strategies include:

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Prevention Report provides customized recommendations about how to prevent and delay Alzheimer's disease. A self-administered online questionnaire gathers information about an individual's lifestyle and medical history to generate a report with specific actions to manage identified risks for the disease. All recommendations are based on evidence-based medicine.

MCI Screen is the most accurate memory assessment published in scientific and medical journals. It is 97.3% accurate in distinguishing between mild cognitive impairment (MCI) and normal aging, allowing for early intervention when memory loss is detected.

Readers of the *Journal on Active Aging* have access to these and other tools at **no charge until January 31, 2006**. Create an account and start offering prevention and assessment services to your clients now. Visit: www.mccare.com/english/icaa.jsp

- a. *Calorie-restricted diet.* Research indicates that a calorie-restricted diet not only controls weight and decreases the risk of heart disease, cancer and stroke from obesity, but also helps the brain. Diets high in saturated fat and cholesterol have been found to increase risk of dementia.⁶
- b. *Omega-3 fatty acid.* This type of fatty acid reduces the risk of dementia by approximately 33%, according to research.⁹ Scientists observed this reduction in risk in people who ate fish high in omega-3 fatty acid—primarily in cold-water fish such as salmon, mackerel, herring and sardines—at least once a week. The correlation between consumption of omega-3 fatty acids and reduction in Alzheimer's risk is still being studied.

Omega-3 fatty acids are necessary components of our cells and cell membranes, yet the human body cannot make them. Therefore, people have to rely on their diets for their intake. The recommended amount of omega-3, 650 mg, is often difficult to get on a daily basis, so supplements are recommended. In addition, individuals should purchase fish raised in the wild, as farm-raised fish do not contain significant amounts of the acid.

- c. *Dietary antioxidants.* The antioxidants from fruits and vegetables reduce the risk of developing Alzheimer's disease by about 20%.⁶ Antioxidants help inhibit the production of free radicals, which damage brain and other cells in the body. In fact, the presence of free radicals has been correlated with the formation of beta amyloid, a hallmark of Alzheimer's. Good sources of dietary antioxidants include prunes, raisins, broccoli, berries, spinach, beets and red grapes.

Regular exercise can decrease the risk of dementia and Alzheimer's disease by approximately 50%

Mental exercise. Mental exercise can decrease an individual's risk of Alzheimer's by about 33%.¹⁰ Mental activities that involve learning something new and attempting to recall it later are recommended, since they engage the parts of the brain where Alzheimer's begins—the entorhinal cortex and the hippocampus. Suggested activities include reading, writing, doing crossword puzzles, and just about anything that requires learning new information. The flip side is watching television.

People who watch 2 or more hours of TV per day are twice as likely to develop Alzheimer's. But by reducing television watching by 20% (about 3 hours per week) and dedicating that time to mental activity, they may be able to reduce their risk by about 33%.

Physical exercise. Exercise that improves the heart and strengthens the muscles is recommended at least 3 times per week. Walking, jogging, riding a bike, playing tennis, and swimming are all great for the brain; activities that build strength and resistance, such as weight training, are also beneficial.

Regular exercise can decrease the risk of dementia and Alzheimer's disease by approximately 50%.¹¹ Exercise exerts a protective force on the neurons (brain cells) of the hippocampus, the brain area initially affected by Alzheimer's that

controls short-term memory. In rat studies, this positive effect typically lasts 3 days, so exercise at least every 3 days is recommended. Furthermore, exercise 5 times per week for at least one hour per session helps reduce some risk factors for Alzheimer's, including cerebrovascular disease, cardiovascular disease, depression, high cholesterol and high blood pressure.

Prevention and early detection: keys to the healthier lifestyle

As a 50 year-old individual with a family history of dementia, I incorporate the necessary preventive strategies—such as those described above—into my lifestyle to keep my brain healthy. (The client handout on page 39 offers a short list of strategies.)

Today, with currently available methods and treatment, it is possible to prevent and delay the onset and progression of Alzheimer's disease or other dementing disorders. To help clients maintain brain health, health promotion professionals should encourage them to know and manage their risk factors. Individuals can manage most risk factors by making minor lifestyle modifications. Examples include changing exercise routines, altering diets, and regularly monitoring cholesterol or blood pressure and getting appropriate treatment.

If clients notice any changes in memory or other cognitive functions, they should get them professionally evaluated and treated immediately. The memory problem might be caused by untreated heart problems, depression or uncontrolled thyroid disorders. But if Alzheimer's disease is the cause, early treatment can delay the disease's progression. For older adults, that delay may allow them to live out their years with greater independence, and keep them out of a nursing home. ☺

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William Rodman Shankle, MD, MS, is a practicing neurologist who specializes in diagnosing and treating Alzheimer's disease or related disorders (www.ShankleClinic.com), and a research fellow in the University of California—Irvine's Department of Cognitive Science. His focus is not only on the prevention and early detection of these disorders, but also on helping patients maintain the highest level of function and independence through the course of the disorders. He also serves as the chief medical officer of Medical Care Corporation (www.mccare.com), a company that develops and markets highly accurate memory assessment products. In 2001, Shankle received the Alzheimer's Association's most prestigious honor, the Zenith Fellows Award, given annually to an independent researcher with a substantial personal commitment to the

advancement of Alzheimer's disease research.

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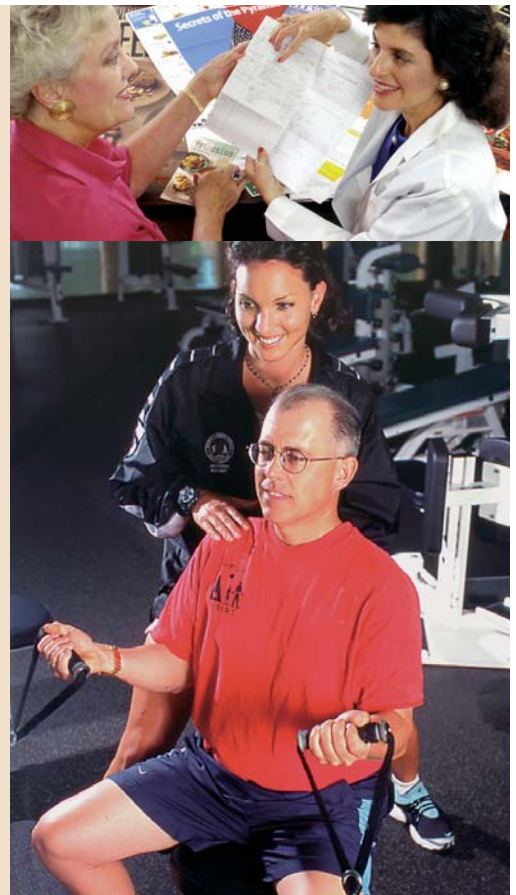
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Lifestyle changes you can make now to improve brain health

by William Rodman Shankle, MD

1. Engage in mental exercise.
Examples: read, write, complete crossword puzzles
2. Exercise at least 3 times per week (30 minutes each time).
Note: New exercisers should begin with shorter sessions and slowly build up to 30 minutes of exercise.
3. Maintain a balanced diet:
 - a. Eat a diet that's lower in calories and fat, particularly saturated fat.
 - b. Eat foods high in omega-3 fatty acids. Examples: salmon, walnuts, green leafy vegetables
4. Control your risk factors:
 - a. Watch your blood pressure.
 - b. Watch your cholesterol level.
 - c. Watch your weight.

Dr. William Rodman Shankle is a practicing neurologist who specializes in diagnosing and treating Alzheimer's disease or related disorders. For information about the Shankle Clinic in Irvine, California, visit www.ShankleClinic.com.

This handout appears in the November/December 2005 issue of the *Journal on Active Aging*[™], published by the International Council on Active Aging[®].

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