Abbreviations: AD = Alzheimer’s disease

**Alzheimer’s is a degenerative disease of the brain, and is responsible for 66% of all dementias.** AD was named for Dr. Alois Alzheimer, who documented this disease then studied his patient’s brain after her death in 1906. Cognitive symptoms include impaired memory, judgment, attention span, and problem-solving skills. The brain’s cortex atrophies, and senile plaques and tangles of neurofibrils and neuropil threads slowly spread throughout the brain.

**How is AD diagnosed?** A definitive diagnosis requires postmortem examination of brain tissue, but doctors use various tools to assess the probability of AD in living patients. They assess changes in health and personality, test memory, problem-solving, counting, and language, analyze blood, urine or spinal fluid, and perform brain scans such as CT and MRI. The Mini-Mental State Examination is often used to assess cognitive impairment. While there is currently no cure, early diagnosis offers the best chance to prolong the patient’s functionality and help the family prepare for the future.

**How many have AD?** 500 Americans die every day from this disease; 15 million people are affected worldwide. Most Americans with AD are aged 65 or older, but younger individuals can develop early-onset AD. Less than 1% of cases are caused by rare genetic variations in families worldwide. Inherited forms of AD tend to develop early, sometimes as young as 30. Aging is the biggest risk factor, with more than 45% of those over 85 affected by AD. By 2050, Shenk estimates 15 million Americans will be affected at an annual cost of $700 billion, a cost that will rise exponentially as the population ages. Current therapies focus on helping people maintain mental function, manage behavioral issues, and slow or delay AD. Just four drugs, Aricept®, Exelon®, Tazadyne,® and Namenda®, appear to help preserve physical function. Two other recent studies show that exercise and adequate levels of Vitamin D also appear to reduce cognitive decline. The exercise study showed that of 1200 people in their 70s, 242 had developed dementia two decades later (including 193 with AD). Moderate to strenuous exercise conferred 40% less risk of getting dementia. The Vitamin D study compared blood Vitamin D levels with cognitive function for 3,325 people 65 and older. The risk of cognitive impairment was 42% higher in those deficient in Vitamin D, and 394% higher in those with severe Vitamin D deficiency. Also promising is last month’s discovery of a compound called P7C3 that restores the ability to form new memories in aging rats. This could point the way to the first cures to address the underlying disease process. Another recent study showed that calorie restriction appears to reverse amyloid plaques in some mice.

**What can we do?** AD is a complex disease that gradually destroys the brain over many years. The causes include genetic, environmental, and lifestyle factors that vary in importance for each person. However, experts have agreed some basic lifestyle changes can reduce the risk of getting dementia by 20%. Countries realize they must forestall AD or risk bankrupting their governments and destroying their health care systems. As a result, national Alzheimer strategies are now being formulated.

**Research efforts** in the past decade, 27,413 articles on AD have appeared in PubMed; over 50% published in the last 5 years. The development of transgenic mice with beta-amyloid plaques and tangles since 1996 has galvanized research. Scientists are studying the pathology of AD, searching for genes that may play a role in late-onset AD, and using imaging to visualize plaques in living brains. The “Nun Study,” a longitudinal study by Dr. David Snowdon, tracked 678 Catholic nuns ranging in age from 75 to 106 years since 1986. Access to their personal and medical records and brain tissue after death has already yielded insights for prevention. High linguistic ability when young, and prevention of strokes and depression appear protective against cognitive decline. High levels of folic acid and homocysteine appear to protect against brain atrophy. High blood levels of lycopene appear to help preserve physical function. Two other recent studies show that exercise and adequate levels of Vitamin D appear to reduce cognitive decline. The exercise study showed that of 1200 people in their 70s, 242 had developed dementia two decades later (including 193 with AD). Moderate to strenuous exercise conferred 40% less risk of getting dementia. The Vitamin D study compared blood Vitamin D levels with cognitive function for 3,325 people 65 and older. The risk of cognitive impairment was 42% higher in those deficient in Vitamin D, and 394% higher in those with severe Vitamin D deficiency. Also promising is last month’s discovery of a compound called P7C3 that restores the ability to form new memories in aging rats. This could point the way to the first cures to address the underlying disease process. Another recent study showed that calorie restriction appears to reverse amyloid plaques in some mice.

**Resources**

7. Large-Scale, Long-Term Studies Support Roles of Physical Activity and Diet in Dementia and Cognitive Decline. (2010-07-11) http://tinyurl.com/2dqnbr4