

**Body System:** Neurologic

**Session Topic:** Dementia and Alzheimer's Disease

**Learning Category I:** Didactic Lecture

### Needs Assessment

Dementia is one of the most common afflictions of the elderly, but it is important for patients and their families to understand that it is not a “normal” part of aging. Normal aging does not result in the loss of large numbers of neurons in the brain, which eventually leads to impaired cognition and functioning. The National Institute of Neurologic Diseases and Stroke (NINDS) lists the following as major types of dementia:<sup>1</sup>

- **Cortical dementia**, which tends to cause problems with memory, language, thinking and social behavior.
- **Subcortical dementia**, which can cause changes in emotions, movement and memory problems.
- **Progressive dementia**, which worsens over time and gradually interferes with certain cognitive abilities.
- **Primary dementia**, which occurs in isolation of any other disease.
- **Secondary dementia**, which occurs as the result of a physical disease or injury.

The Mini-Mental State Exam is the most commonly used tool to assess cognitive impairment; it measures memory, orientation to time and place, naming, reading, visuospatial orientation, writing and the ability to follow a three-stage command. Although the accuracy is dependent upon a person's age and educational level, it can be adjusted for educational level to improve the sensitivity and specificity.<sup>2,3</sup> Dementia is usually diagnosed if two or more brain functions, such as memory, language skills, perception or cognitive skills (reasoning and judgment) are significantly impaired without the loss of consciousness. While there are numerous disorders that can cause dementia, the most common of which is Alzheimer's disease (AD), family physicians can rule out any other treatable conditions (such as depression or vitamin B<sub>12</sub> deficiency) that can cause similar symptoms.<sup>1-3</sup>

Laboratory tests are often necessary as part of an initial evaluation of patients with suspected dementia. Thyroid function and vitamin B<sub>12</sub> tests are recommended in conjunction with standard panels of complete blood count (CBC), serum electrolytes, serum calcium and serum glucose tests. Other tests, such as for syphilis, Lyme disease, human immunodeficiency virus (HIV), urinalysis, liver function, serum folic acid level, erythrocyte sedimentation rate and heavy metal assays, are not considered standard but may be warranted if physicians have a high index of suspicion for other causes. Patients should be screened for depression and, while no laboratory tests exist for such testing, tools such as the Geriatric Depression Scale can be used to evaluate psychologic symptoms that may be present with cognitive decline.<sup>2</sup> A differential diagnosis should also be conducted to rule out other conditions that may be causing dementia, such as psychiatric disorders or immunologic/inflammatory disorders

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(including Hashimoto's encephalopathy, Morvan's syndrome, primary cerebral vasculitis, HIV, Whipple's disease and prion diseases).<sup>2,4</sup>

The cause of dementia is not definitively known, but it is suspected that a complex combination of genetic abnormalities and behavioral and environmental factors may play a role in the development of some types of dementia. Although genetic risks cannot be modified, family physicians can help counsel patients on ways to make healthy lifestyle changes that decrease their risk for developing dementia based on certain behavioral or environmental factors.<sup>1</sup> Family physicians can also help patients modify unhealthy behaviors (i.e., smoking, drinking, lack of physical activity) that may increase their risk for developing some types of dementia – and other diseases and conditions.

Alzheimer's disease (AD) is the most common neurological disorder and most common cause of dementia for people over the age of 65; it is currently estimated to affect 5.3 million Americans.<sup>5</sup> Alzheimer's disease causes nearly 75,000 deaths per year; it is currently the sixth-leading cause of death in the U.S. It is estimated that 15.5% of residents of nursing homes and 7.5% of patients under the care of home hospices have AD.<sup>6</sup> AAFP Practice Profile data reports that family physicians see an average of 15.5 nursing home patients per week, and make 2.6 nursing home visits per week. They also supervise 10 home health care patients and five hospice patients per month.<sup>7</sup> The Alzheimer's Association recently reported that the prevalence of AD is rising among people of certain racial/ethnic groups; both Hispanics and blacks are almost twice as likely as whites to have AD, although both populations are less likely to be diagnosed. Exact reasons for this demographic shift are unknown, but researchers suspect that socioeconomic characteristics – primarily low education, low income and rural residence – serve as risk factors for cognitive impairment and afflict more minorities than whites.<sup>5</sup>

Scientists have also discovered that mutations in a number of genes appear to influence susceptibility to AD; they include amyloid precursor protein (APP), presenilin 1, presenilin 2 and apolipoprotein. In fact, a recent study from the National Institute on Aging found that the presenilin 1 (PS1) gene plays a pivotal role in cell survival by enabling toxic proteins to be cleared from the brain. While researchers have suspected that PS1 mutations served as a risk factor for the early-onset form of AD, the study concluded that the disruptions in autophagy (the process of lysosome enzymes digesting waste proteins) caused by PS1 mutations may necessitate future research to discover how they can potentially be targeted to normalize or moderate autophagy when it is disrupted.<sup>8</sup>

Alzheimer's disease is characterized by a severe loss of mental functioning, often manifested by a noticeable decline in decision-making and language skills and memory. People who develop early-onset AD, which is rare but can affect those in their 30s, 40s and 50s, often have genetic mutations that cause the brain to undergo changes that eventually leads to development of the disease. There is no cure for AD, and there are no medications to slow the progression of the disease. FDA-approved medications that are commonly prescribed are intended to help people maintain their mental function and manage behavioral symptoms, although they carry with them an array of side effects.

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Patients with AD are advised to work with their doctors to find a treatment that works best for them, as there is no one standard treatment that proves to be effective for all patients. Most research maintains that the key to managing AD is early detection; if it is diagnosed at an early stage, some medications and behavior therapies may be able to preserve cognitive function.<sup>9</sup>

If research concludes that behavioral risk factors (such as smoking, drinking, poor diet and lack of exercise) play a role in the development of dementia or neurodegenerative disorders, family physicians may be best poised to help counsel patients on ways to make healthy lifestyle changes that decrease their risk. Further, if preventive therapies are approved and become available, family physicians may be able to administer them to patients who are at increased risk due to genetic or behavioral factors.<sup>1,9</sup>

Because there is currently no pharmacologic therapy to stop or slow the deterioration of brain cells characteristic of AD, treatment focuses on improving the patient's quality of life and functional status. Non-pharmacologic interventions may include behavioral techniques, environmental modification (i.e., fall prevention) and massage therapy, while medications may include cholinesterase inhibitors, memantine, selegiline, vitamin E (which has been reported to be a "neuroprotective agent" but is unproven) and, potentially, estrogen replacement therapies and anti-inflammatory medications. Short-acting benzodiazepines may also be useful for patients on an as-needed basis for intermittent agitation, and some antipsychotics (such as risperidone and quetiapine) may also help with agitation and insomnia.<sup>10,11</sup>

Family and caretaker involvement is critical in the treatment of patients with AD, so family physicians are uniquely positioned to initiate discussions with families about the importance of treatment and monitoring the patient's behavior and activities of daily living (ADLs). Some family members and/or caregivers may also investigate specific treatments (such as integrative therapies) and inquire about them with family physicians, in which case family physicians should be prepared to address questions and provide accurate and appropriate information.

Family physicians are also in a unique position to provide not just information to caregivers, but also to help refer them to community resources (such as support groups) that can be helpful. The stress and burden of caring for someone who has AD can cause physical and psychological problems for caregivers; family physicians should be aware of this and discuss any problems, and should be aware of existing resources and be prepared to refer patients and/or family members to such resources.

### **Gaps in Knowledge, Competence and/or Performance:**

- As family physicians may be the first health care providers to recognize signs of cognitive decline in high risk patients (especially the elderly or patients with Down's syndrome), they should check for symptoms of neurologic distress and be prepared to assess, diagnose and treat patients accordingly.

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- In the event that patients require referral to sub-specialists for advanced testing and treatment, family physicians should still coordinate patient care.
- Family physicians should actively assess and screen elderly or at risk patients for signs of dementia, and should help patients and their families to understand that it is not a “normal” part of aging.
- Family physicians also should be comfortable counseling both patients and family members on coping with neurologic disorders, particularly those that result in loss of cognitive functioning, such as Alzheimer’s disease.
- Family physicians should have an in-depth knowledge of the drug therapy options for patients with Alzheimer’s disease and be able to create an individualized disease management plan.
- Family physicians should be aware of the physical and psychological burden faced by caregivers of patients who have AD, and should discuss this with them and be prepared to refer caregivers to appropriate community resources.

### **Learning Objectives:**

At the end of this session, participants will be able to:

1. Assess symptoms of neurologic distress and be prepared to evaluate, diagnose and treat patients accordingly.
2. Examine aging patients for signs of cognitive decline or dementia and counsel family members on what is considered a “normal” part of aging.
3. Counsel patients and their family members on how to cope with neurologic disorders that result in the loss of cognitive functioning, such as Alzheimer’s disease.
4. Prescribe appropriate drug therapy to slow the progression of Alzheimer’s disease.

### **References:**

1. Dementia: Hope Through Research. National Institute of Neurological Disease and Stroke (NINDS), National Institutes of Health (NIH). Updated September 2010. Available at [http://www.ninds.nih.gov/disorders/dementias/detail\\_dementia.htm](http://www.ninds.nih.gov/disorders/dementias/detail_dementia.htm)

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2. Adelman A, Daly M. Initial Evaluation of the Patient with Suspected Dementia. *Am Fam Physician* 2005;71(9):1745-1750. Available at <http://www.aafp.org/afp/2005/0501/p1745.html>
3. U.S. Preventive Services Task Force Recommendations and Rationale: Screening for Dementia. *Am Fam Physician* 2004;69(6):1473-1475. Available at <http://www.aafp.org/afp/2004/0315/p1473.html>
4. Knight R. Differential diagnosis of rapidly progressive dementia. *J Neurol Neurosurg Psychiatry* 2010;81(10). Available at <http://jnnp.bmj.com/content/81/10/e6.2.abstract>
5. 2010 Alzheimer's Disease Facts and Figures. Alzheimer's Association. Available at [http://www.alz.org/documents\\_custom/report\\_alzfactsfigures2010.pdf](http://www.alz.org/documents_custom/report_alzfactsfigures2010.pdf)
6. Alzheimer's Disease. National Center for Health Statistics, Centers for Disease Control and Prevention (CDC). CDC Fast Stats. April 2010. Available at <http://www.cdc.gov/nchs/fastats/alzheimr.htm>
7. American Academy of Family Physicians. Practice Profile I Survey. October 2009.
8. Gene Linked to Alzheimer's Disease Plays Key Role in Cell Survival. National Institute on Aging Alzheimer's Disease Education & Referral Center Research (ADEAR) Information and News. NIH. June 10, 2010. Available at <http://www.nia.nih.gov/Alzheimers/ResearchInformation/NewsReleases/PR20100610presenilin.htm>
9. Alzheimer's Disease. NINDS, NIH. Updated July 2010. Available at <http://www.ninds.nih.gov/disorders/alzheimersdisease/alzheimersdisease.htm>
10. Press D, Alexander M. Treatment of dementia. UpToDate. May 2010.
11. Mucche J, McCarty S. Geriatric Rehabilitation. Medscape Physical Medicine and Rehabilitation. October 2009. Available at <http://emedicine.medscape.com/article/318521-overview>