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## PREVENTION HIGHLIGHT

### **Alzheimer's Disease Economics: The Cost of Care and the Impact of Delaying the Disease**

Currently there are up to 4.8 million individuals in the United States with Alzheimer's Disease (AD). Annual formal and informal costs of caring for AD patients range from \$15,360 to \$65,885 (midpoint = \$40,622), giving an estimated \$111.9 billion yearly cost of caring for AD in the USA. The average cost of formal care due to physician and emergency room visits, hospitalization, medications and long-term care is \$27,672, which increases with dementia severity. The cost of unpaid caregiving ranges from \$10,400 to \$34,517 annually, which accounts for 60% of caregiving costs, and is up to 70 hours per week. Lost wages for patient and caregiver plus increased medical costs related to caregiver illness costs \$50,000 per year for a total of \$21 billion annually in the USA. Medicare costs for demented patients are 1.6 times that of non-demented patients. For mild and moderate dementia in AD patients, the most significant factor affecting cost of care is the presence of comorbid conditions, other diseases an individual patient might have other than AD. 93% of AD patients have at least one comorbidity, and 60% have at least three. The cost of caring for comorbid conditions in AD is \$3,000 per year higher than patients in the same age group who do not have AD. AD patients visit the emergency room twice as often as non-demented patients in the same age group and are hospitalized an average of 16 days longer, which costs \$2,500 more per hospitalization. These data clearly indicate that delaying AD not only reduces healthcare costs but also improves quality of life.

In this regard, AD treatment in the form of cholinesterase inhibitor therapy for six months to two years reduces the possibility of being admitted to a long-term care facility by about 50%. At a cost of about \$120 per month for cholinesterase inhibitor therapy combined with home care costs that are 25% of those in institutional settings, the associated delay in AD progression saves approximately \$2,000 for each month that a patient's institutionalization is delayed. A realistic and achievable delay of 2 years in the time to institutionalization would therefore save approximately \$48,000 per AD patient, or approximately \$200 billion for the current cohort of AD patients in the USA.

Through a combination of risk factor identification and treatment, AD medication and non-medication therapy, AD onset can be delayed for 1-5 years, and AD progression can be delayed for  $\geq 1$  year during a pre-dementia stage called the mild cognitive impairment stage and for 1-3.5 years during the dementia stage. When these current treatment approaches are combined, the onset and progression of AD may be delayed by 3-7.5 years. Delaying AD does not prolong life expectancy because most patients pass away for other reasons (e.g., stroke, cancer, heart disease). However, treating AD reduces overall expenses by decreasing hospitalization and institutionalization rates, diminishing caregiver burden,

and helping to control comorbid conditions. This is consistent with data from The National Long-Term Care Survey, which suggests that a greater degree of cognitive impairment at time of diagnosis associates with higher total cost of care and longer duration of residence in a nursing home.

## RESEARCH UPDATES

### **Screening Battery May Help Physicians Evaluate Parkinson's Patients' Fitness to Drive**

Dr. Hannes Devos at the Katholieke Universiteit Leuven, Belgium, and colleagues evaluated various models to help predict fitness to drive for Parkinson's patients. The study included 80 subjects, 40 with Parkinson's disease and 40 healthy matched controls. All subjects were assessed using a driving simulator, a driving history survey, and the Clinical Dementia Rating scale. Additionally Parkinson's patients underwent a clinical test battery and an evaluation of fitness to drive performed by the Center for Fitness to Drive Evaluation and Car Adaptations (CARA) of the Belgian Road Safety Institute. The latter was comprised of visual, cognitive, and driving tests. The model that best predicted fitness to drive included the Clinical Dementia Rating Scale, assessment of the duration of the disease, sensitivity to contrast, and the Unified Parkinson's Disease Rating Scale. The model correctly predicted whether 36 (out of 40) patients with Parkinson's disease would pass or fail the driving test.

### **Family History of Parkinson's May Increase Risk of Alzheimer's**

Relatives of individuals with Parkinson's have an increased risk for developing Alzheimer's disease according to a recently study led by Dr. Walter A. Rocca, of the Mayo Clinic of Medicine in Rochester, Minn. The study included three groups: 1,019 first-degree relatives of 162 patients with Parkinson's Disease; 858 relatives of 147 individuals who were of same age and sex as those with Parkinson's but did not have the disease; 2,716 relatives of 411 patients with Parkinson's disease referred to the Mayo Clinic. Relatives of those with Parkinson's had a 37% increased risk of developing Alzheimer's. Furthermore, relatives of those who developed Parkinson's before the age of 66 were 73 percent more likely to develop Alzheimer's.

### **Alzheimer's Patients Maintain Sustained Response to Treatment**

643 subjects with probable Alzheimer's disease were evaluated annually using neuropsychiatric testing an average of 3 years and up to 10 years. The study was led by Dr. Susan D. Roundtree of Baylor University in Houston, Texas. Researchers concluded that while patients' families may not notice, Alzheimer's patients who consistently use Alzheimer's medications have a slower rate of decline than those that do not consistently take medication.

### **Quick Treatment of Mini-Stroke Significantly Reduces Major Stroke Risk**

Researchers at Oxford's Radcliffe Hospitals found that prompt treatment of minor strokes reduces the risk of major strokes by about 80%. The study included two stages. In the first stage, 310 patients were evaluated in a standard primary care practice setting in the UK.

They waited on average about three days for an assessment and an average of 20 days to receive treatment. 10.3% of these subjects had a major stroke within 90 days of the initial assessment. The second phase of the study was conducted in a specialized clinic set-up for treating stroke patients. The 281 patients included in this phase of the study were evaluated and given treatment within one day. 2.1% of individuals in this group had a major stroke within 90 days of their initial assessment. The reduction in risk was independent of age and sex.

### **Hypertension Treatments May Prevent Alzheimer's Disease**

Researchers at Mount Sinai School of Medicine studied medications currently used to treat other disorders. Of the 55 drugs they studied, they found 7 drugs used for treating hypertension were the most effective in reducing the risk of Alzheimer's disease. The hypertension drugs seem to prevent beta-amyloid production, a protein which causes plaque in the brains of Alzheimer's patients. The study was published in the Journal of Clinical Investigation.

### **Chronic Disease More Prevalent Among North American Elderly than European**

An online study conducted by the journal Health Affairs, found that elderly in the U.S. are more likely to be diagnosed with and treated for chronic diseases than their counterparts in Europe. The European countries included in the study were Austria, Denmark, France, Germany, Greece, Italy, the Netherlands, Spain, Sweden, and Switzerland. According to the study, U.S. spending on healthcare could be reduced by up to \$1,750 per person per year if those 50 and over were treated for common conditions at the same rate as those aged 50 and over in Europe. These common conditions include heart disease, high blood pressure, high cholesterol, stroke, diabetes, chronic lung diseases, asthma, arthritis, osteoporosis, and cancer.

### **Driving After Dementia Diagnosis May Be Possible For Some**

The findings of a study presented at the 132nd Annual Meeting of the American Neurological Association suggest that some individuals with mild cognitive impairments may be able to drive for years with ongoing assessment. The study included 84 subjects with dementia for whom it was still safe to drive along with 44 subjects without dementia. Those with dementia were examined every 6 months and underwent cognitive, neurological, visual and physical function examinations. They also took a standard driving test within two weeks of each medical examination. The group without dementia was evaluated only after 18 months. The subjects were followed for three years. The study found that those with very mild dementia could continue to drive for another two years or more.