

The following abstracts, from medical journals containing literature on the treatment and overall cost of care for Alzheimer's disease were selected for their relevance to this Special Report.

Estimated Costs in a Large Population of Patients with Alzheimer's Disease

A decade's worth of information from the National Long-Term Care Survey and Medicare was used to predict the survival and care requirements for older people with suspected Alzheimer's disease (AD). Analysis of national data from 3254 older patients showed that those with greater degrees of cognitive impairment at diagnosis were more likely to die, be institutionalized, require more hours of care while still in the community, and incur higher medical costs for community, institutional, and medical care. Women with AD lived longer and had higher costs of care, both in the community and in institutions. Overall, the average 10-year costs of dealing with AD might be as high as \$109,000 for women and \$67,000 for men. Once identified as having AD, patients can be expected to spend 10% to 60% of their remaining life in institutions. The authors conclude that interventions to slow progression can affect both survival and costs.

Kinosian BP, Stallard E, Lee JH, et al. Predicting 10-year care requirements for older people with suspected Alzheimer's disease. *J Am Geriatr Soc* 2000;48:631-638.

Excess Medicare Costs for Alzheimer's Disease

Medicare costs for patients with Alzheimer's disease (AD) were compared with those for individuals without AD. Interviews and screening data

from more than 17,000 people 65 years of age and older were retrospectively reviewed to determine their AD status. In the approximately 500 patients who had a claims-based diagnosis of AD (prevalence, 3.1%), the average annual (1994) total cost to Medicare was \$6021 versus \$2310 for those without the diagnosis ($P < 0.01$). Inpatient costs were 9 times higher in patients with AD than in those without AD. When adjusted for risk characteristics, the excess cost factor for AD was 1.6 times greater. The key finding was that the use of Medicare resources drops with each year from the time of diagnosis. Costs increased as cognition decreased, at a rate of about \$250 for each additional year from diagnosis. The authors suggest that diminishing Medicare costs related to the length of AD diagnosis may be the result of fewer resources being invested as life expectancy decreases. The study did not include costs of long-term care or prescription drugs.

Taylor DH, Sloan FA. How much do persons with Alzheimer's disease cost Medicare? *J Am Geriatr Soc* 2000;48:639-646.

Cost of Alzheimer's Disease in Managed Care

A large managed care organization with more than 80,000 Medicare enrollees evaluated the medical and prescription claims of 677 paired cases of members with and without Alzheimer's disease (AD). The mean annualized total costs were 1.5 times higher for members with dementia relative to controls (\$13,487 versus \$9276, $P < 0.001$) when adjusted for comorbidities. Those with dementia had almost twice as many inpatient and emergency department claims as controls. When hospitalized, the length of stay for patients with AD averaged 12 more days. Seventy-five percent of the excess \$4211 of inpatient costs was attributable to inpatient care. Emergency department costs for patients with AD

averaged \$545 compared with \$221 for controls ($P < 0.001$); prescription claims were virtually identical. The authors conclude that these high costs should provide incentives for managed care organizations to improve AD care.

Gutterman EM, Markowitz JS, Lewis B, Fillit H. Cost of Alzheimer's disease and related dementia in managed-Medicare. *J Am Geriatr Soc* 1999;47:1065-1071.

Costs Before and After Cholinesterase Inhibitor

Medical and prescription claims for 70 individuals with dementia were examined over a period of approximately 2 years. Patients were enrolled in the Medicare plan of a national managed care organization, were diagnosed with mild-to-moderate Alzheimer's disease (AD) or related dementia, and were prescribed the cholinesterase inhibitor donepezil at some point during the study period. The average per-diem medical costs for these patients were \$1.22 (ie, \$36.60/month) lower in the period after initiation of treatment than in the pre-donepezil period ($P = 0.02$). The claim categories with the largest and most statistically significant reductions were outpatient (\$23.10/month) and office visits (\$19.50/month). Prescription claims in the post-donepezil treatment period were an average of \$2.59/day higher ($P < 0.001$). As a result, donepezil was associated with a decrease in medical costs but an overall cost increase of \$2.11/day. The study did not evaluate indirect costs (eg, caregiver time) or long-term care requirements.

Fillit H, Gutterman EM, Lewis B. Donepezil use in managed care Medicare: Effect on health care costs and utilization. *Clin Ther* 1999;21:2173-2184.

Estimated Savings with Cholinesterase Inhibitor Therapy

This pharmacoeconomic model predicted the potential savings associated

with a delay to the more severe stages of AD induced by treatment with the cholinesterase inhibitor rivastigmine. The researchers arrived at their main result—an overall cost savings of up to \$4839 per patient with mild-to-moderate AD after 2 years of treatment—by combining 2 pre-existing sets of data. First, based on phase III clinical trial data, they calculated the delay in the decline of cognitive function (as measured by the Mini-Mental State Examination [MMSE]) as a result of drug therapy. Second, based on previously published research, the authors calculated the costs of care and institutionalization as a function of the MMSE. By combining these 2 estimates, they then calculated the reduction in healthcare costs and the risk of institutionalization associated with drug treatment. The results showed that rivastigmine may be most cost effective for patients in the early mild stages of AD. Most of these potential savings are realized only after 2 years of treatment, when the cumulative effect of delays in the progression from mild-to-moderate disease stages becomes dominant. The authors conclude that rivastigmine significantly reduces the cost of AD care by delaying the transition from mild to moderate AD.

Hauber AB, Gnanasakthy A, Snyder EH, et al. Potential savings in the cost of caring for Alzheimer's disease. *Pharmacoeconomics* 2000;17:351-360.

Improved Family Care Postpones Nursing Home Placement

Spousal caregivers of 206 patients with Alzheimer's disease (AD) were randomized into intervention (comprehensive support and counseling) or nonintervention groups. Intervention consisted of 6 sessions of individual and family counseling within 4 months of enrollment. These caregivers also participated in support groups that had counselors available as needed. Time to placement of the patient with AD in a nursing home was the main outcome.

Over the 3.5-year study period, the median time from baseline to nursing home placement was 329 days longer in the intervention group than in the control group ($P = 0.02$). After adjustments for caregiver sex and patient age and income, the relative risk of placement from a Cox proportional hazard model was 0.65. The support program had the greatest effect on patients with mild or moderate dementia, for whom institutionalization is generally least appropriate.

Mittelman MS, Ferris SH, Shulman E, et al. A family intervention to delay nursing home placement of patients with Alzheimer's disease. *JAMA* 1996;276:1725-1731.

Early Memory Deficits in Alzheimer's Disease

Longitudinal changes in Mini-Mental State Examination (MMSE) scores for about 1500 individuals older than 75 years of age without dementia were tested at baseline, 3 years, and 6 years. At each time point, participants were also examined by physicians for possible dementia. After 6 years, 459 of the avail-

able participants were still without dementia and 73 had developed Alzheimer's disease (AD). In the 73 individuals who eventually developed AD, the total MMSE at baseline was 19.56 compared with 26.40 in the group without dementia ($P < 0.001$). Although 8 of the 10 MMSE subscales were significantly lower in the incident AD group at 6 years, only the delayed memory subscale was also a significant predictor of AD at the 3-year measurement point. The authors conclude that their study, which is one of the few to monitor the incidence of dementia in the same patients for such a long period of time, indicates that AD is preceded by a long preclinical or prodromal phase in which deficits of memory are common. They advise against the use of the MMSE as a diagnostic test for preclinical AD, but encourage development of more sensitive neuropsychological tests to enable further study of the subtle early signs of AD.

Small BJ, Fratiglioni L, Viitanen M, et al. The course of cognitive impairment of preclinical Alzheimer disease. *Arch Neurol* 2000;57:839-844.