survey of headache in the United States. This study utilized data collected in the 2005 baseline survey of 14,544 adults who were identified as having migraine based on criteria proposed by the International Classification of Headache Disorders, 2nd edition. Participants completed self-administered, validated questionnaires on headache features, frequency, impairment, resource and medication use, and productivity loss. Direct and indirect headache-related costs were estimated using unit-cost assumptions derived from the PharMetrics Patient-Centric database, wholesale acquisition costs of medications, and wage data from the US Bureau of Labor Statistics. The population of migraineurs was divided into quartiles (1–2, 3–6, 7–16, and 17–365 headache days) based on self-reported headache frequency in the past year. Analyses controlled for age, gender, income, geographic region, population density, and insurance status. **RESULTS:** Of the original 14,544 identified migraine cases, 12,829 completed the 2005 survey and were included in this analysis. Higher headache frequency quartile was associated with more nights in hospital and increased visits to primary care, urgent care, pain clinic, emergency room, and neurologists or headache specialists. The most commonly cited medications used for headache relief in all four quartiles were non-prescription analgesics and NSAIDs, and the most commonly cited prescription medications in all quartiles were the triptans. Lost productive time (but not absenteeism) generally increased progressively in the higher quartiles. Average per-person annual total costs, including direct and indirect costs, ranged from $2528 (lowest quartile) to $6014 (highest quartile). **CONCLUSIONS:** Decreasing headache frequency is associated with positive economic benefits of reduced resource use and productivity loss. These benefits should be considered by stakeholders interested in improving migraine outcomes in a cost-effective fashion.

PND8

THE IMPACT OF GENERIC SUBSTITUTION OF TOPIRAMATE ON HEALTH CARE COSTS: CONVERSION OF THE CANADIAN EXPERIENCE INTO THE SETTINGS OF G4 EUROPEAN COUNTRIES

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OBJECTIVES: Examine the economic impact of generic substitution of the antiepileptic drug (AED) topiramate in Canada; and convert observed Canadian costs into the settings of France, Germany, Italy, and the UK. **METHODS:** Health claims from Québec's provincial health plan (RAMQ) between January 2006 and September 2008 were analyzed. Patients with epilepsy or non-febrile convulsions (ICD-9: 345, 780.3 or 780.39) and ≥2 topiramate (Topamax®) dispensings were selected. An open-cohort design was used to classify patients' observation into mutually-exclusive periods of branded versus generic use of topiramate. Total health care utilization and costs in Canada (C$2007/person-year) were compared between periods of branded versus generic use, after adjusting for demographics, treatment characteristics, and comorbidities. Annualized health care costs (€2007 and L2007/person-year) were converted at the patient level using Canadian utilization rates, adjusted with service-use ratios and European unit costs. Non-parametric bootstrap procedure was used to determine statistical significance for the cost measures. **RESULTS:** A total of 1164 patients (mean age: 39.8 years, 61.7% female) were observed for 2.6 years on average. Unadjusted results consistently associated generic use with significant increases in health care resource utilization. Periods of generic topiramate use remained associated with significant increases in pharmacy dispensings (other AEDs: +6%, non-AEDs: +31%, $p < .001$), a 17% increase in hospitalizations ($p = 0.015$), and 21% longer lengths of hospital stays ($p < .001$). Non-topiramate adjusted health care costs were C$1,060/person-year higher during periods of generic use ($p = 0.005$). Converted per-patient health care costs excluding topiramate were estimated to be significantly higher for generic relative to brand periods in all four countries (adjusted cost differences per person-year [95% CI]: France: €815 [€427–€1.215], Germany: €706 [€369–€1058], Italy: €795 [€430–€1177], UK: L485 [L283-L687]; $p < 0.001$ for all comparisons). **CONCLUSIONS:** Higher health care costs were projected for G4 European countries from the Canadian experience following generic substitution of topiramate, offsetting potential savings from lower generic prices.

PND9

IS GENETIC TESTING IN COMBINATION WITH PREVENTIVE DONEPEZIL (ARICEPT®) TREATMENT FOR PATIENTS WITH MILD COGNITIVE IMPAIRMENT COST- EFFECTIVE?

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OBJECTIVES: To evaluate the cost-effectiveness of using Apolipoprotein E (APOE) testing and preventive treatment with Donepezil for Mild Cognitive Impairment (MCI) patients and to consider various scenarios of positive gene distribution and treatment strategies. **METHODS:** A decision tree was constructed to the costs and effects of the intervention: an APOE predictive genetic test and preventive treatment with donepezil in the MCI population. Clinical data from a RCT conducted in North America between 1999–2004 were used for the model. This study concluded that donepezil was associated with a lower rate of progression to Alzheimer's Disease (AD) during the first 12 months of treatment in MCI patients, although the rate of progression to AD after three years was not lower among patients with donepezil than among those given placebo. Our model examined several scenarios including different prevalence estimates for the APOE e 4 gene, a risk factor for developing AD and different treatment strategies (with and without Donepezil). Extensive sensitivity analyses were performed on the probability of progressing to AD, health state utility and health care costs. **RESULTS:** Over 3 years preventive treatment of MCI patients is predicted to result in the gain of 0.015 QALYs, when comparing to usual care. The Incremental cost was CAD $ 595 with donepezil treatment; consequently, the incremental cost-effectiveness ratio (ICER) is estimated to be $81,599 when the APOE e 4 gene probability is 0.55. With a probability of 0.36, the average in developed countries, the ICER is CAD $103,245. Results were less sensitive in the scenario with a lesser probability of APOE e 4. **CONCLUSIONS:** Genetic testing in combination with preventive donepezil treatment for MCI patients may not be economically attractive in this setting. Under certain assumptions, however, this intervention might be cost-effective for MCI patients due to delayed onset of AD.

PND10

COST-EFFECTIVENESS STUDY IN PATIENTS WITH MILD TO MODERATELY SEVERE ALZHEIMER'S DISEASE: PROJECTED BENEFITS OF DONEPEZIL IN THE UNITED KINGDOM

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OBJECTIVES: Previous cost-effectiveness studies have modeled Alzheimer's disease (AD) progression in terms of cognitive function alone, a single global severity measure, or progression to the need for "Full Time Care." This study estimates AD progression in terms of correlated changes in cognition, behavior and function. These projections are then used to analyze the cost-effectiveness of donepezil versus standard care in the UK. **METHODS:** Patient-level data from eight randomized placebo-controlled donepezil trials and a seven-year follow-up registry provided the basis for modeling longitudinal rates of change in cognition (MMSE), behavior (Neuropsychiatric Inventory), activities of daily living and Instrumental Activities of Daily Living. A discrete event simulation is used to project outcomes for two patient groups, identical except for treatment: donepezil 10mg per day versus untreated. Patient mix and costs were developed from UK-specific literature. Costs are reported in 2007 British pounds. The discount rate is 3.5%. **RESULTS:** After ten years, patients with mild to moderately severe AD ($26 \geq MMSE \geq 10$) on donepezil are better off than those without treatment, with costs reduced from both health care system and societal perspectives, savings averaging ≤1421 and ≤4094 per patient respectively. Donepezil-treated patients experience 0.12 more QALYs per patient and their caregivers 0.01 QALYs compared to untreated patients and their carers. In sensitivity analyses, dominance holds over a wide range of inputs, including when treatment effects, the impact of disease severity on caregiver time and patient utility, and institutionalization rates are decreased by 25%; or when the time horizon is decreased to 5 years. In probabilistic sensitivity analyses, donepezil dominates in 53 to 77% of replications (depending on perspective), and results in cost/QALY estimates below ≤30,000 in 79 to 90% of replications. **CONCLUSIONS:** These results suggest that donepezil is highly cost-effective in patients with mild to moderately severe AD in the UK.

PND11

COST-EFFECTIVENESS OF SCREENING AND TREATMENT OF ALZHEIMER'S DISEASE WITH DONEPEZIL IN THE UNITED KINGDOM

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OBJECTIVES: The cost-effectiveness of screening adults presenting with subjective memory complaints and treating those diagnosed with Alzheimer's disease (AD) with donepezil 10 mg is examined for the UK. **METHODS:** Patient-level data from eight randomized placebo-controlled donepezil trials and a seven-year follow-up registry were used to model correlated longitudinal rates of change and treatment effects in cognition, behavior, and function. Using UK AD prevalence and diagnosis patterns, a discrete event simulation projects outcomes for annual screening of patients aged over 65 reporting memory complaints, compared to no screening or donepezil treatment. Patients with undiagnosed AD are assumed to report memory complaints between onset of the disease and the time they would have been diagnosed in the absence of screening (on average, 36 months from disease onset). **RESULTS:** Seventeen patients need to be screened to diagnose one patient with AD. Screening costs average ≤5,100 per patient diagnosed. Over a ten year time horizon, screening and treating reduces total direct costs by an average of over ≤2,500 per diagnosed patient, and indirect costs by almost ≤4,500 per patient. QALYs gained with screening and donepezil treatment average 0.17 per patient, compared to 0.12 QALYs per patient with donepezil treatment when diagnosis is delayed in the absence of screening. QALY gains for caregivers are 0.02. In probabilistic sensitivity analyses, screening dominates no treatment in 31% to 63% of replications (depending on perspective), and results in cost/QALY estimates below ≤30,000 in 79% to 86% of replications. Overall, probabilistic analyses yielded a mean incremental cost-effectiveness ratio of ≤7,467/QALY if only direct costs were considered, and dominance from a societal perspective. **CONCLUSIONS:** Although screening has significant upfront costs, identifying and treating AD patients early results in overall cost savings and QALY benefits compared to no treatment, and larger QALY benefits than treatment following delayed diagnosis without screening.