level. The primary outcome was the cost per additional quality adjusted life year (QALY). The incremental cost per additional pain-controlled day was a secondary economic outcome. Sensitivity analyses were conducted to investigate the robustness of the results. **RESULTS:** The total direct cost of treatment over one-year was $12,691 for Sativex® + SAC and $3,340 for SAC. The total QALYs for Sativex® + SAC were 0.3793 and 0.2459 for SAC. The ICUR for Sativex® + SAC compared to SAC was $70,103/QALY. The number of pain controlled days over a one-year time horizon was 196 for Sativex® + SAC and 122 for SAC. Cost drivers were Sativex® utilization (5 daily sprays = $36,512/QALY; 11 sprays = $80,327/QALY). The incremental cost per pain-controlled day was $127. **CONCLUSION:** Results indicated that Sativex® + SAC was more expensive than SAC, but provided increased QALYs and pain-control in MS patients with neuropathic pain.

PND15

COST-UTILITY OF INTERFERON BETA-1B IN THE TREATMENT OF PATIENTS WITH A CLINICALLY ISOLATED SYNDROME SUGGESTIVE OF MULTIPLE SCLEROSIS

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OBJECTIVE: To estimate the cost-utility of interferon beta-1b (IFNB-1b) in the treatment of patients with a clinically isolated syndrome (CIS) suggestive of multiple sclerosis (MS). **METHODS:** We developed a Markov model of the epidemiology and treatment of CIS and MS. The model allows users to simulate outcomes over varying time horizons. A hypothetical cohort of 1000 patients with incident CIS was specified, with initial health states defined by Kurtzke Expanded Disability Symptom Scale (EDSS). The cohort was assumed alternatively to be treated with IFNB-1b (250mg eod) following an initial demyelinating event suggestive of MS or not treated until confirmation of MS. Data from a published clinical study (BENEFIT) were used to model EDSS progression over time and transitions from CIS to MS. Relapses were estimated from BENEFIT and published natural history data. Following transition to MS, all patients were assumed to be treated with IFNB-1b until EDSS 6.5. Direct and indirect costs of MS treatment and IFNB-1b were estimated from published literature and pricing schedules. Patient utilities were derived from EQ-5D data from BENEFIT, supplemented by published data defined by EDSS score and relapse occurrence. Mortality was estimated using life tables and EDSS data. Costs (2007 currency) and outcomes were discounted at 5% per annum. Sensitivity analyses were performed on key model parameters. **RESULTS:** Use of IFNB-1b was associated with slower EDSS progression (hence, longer time to MS diagnosis), and reduced relapse burden. In the base case (Australian perspective; 25-year simulation), incremental cost-utility of IFNB-1b versus no treatment was AUD58,600 (USD$51,400) per quality-adjusted life year (QALY) gained. Findings were sensitive to years simulated, IFNB-1b cost and treatment effect, and underlying rate of disease progression. **CONCLUSION:** IFNB-1b treatment of patients with CIS apparently offers reasonable value for money relative to many well-accepted health care interventions.

PND16

THE CONCENTRATION AND PERSISTENCE OF HEALTH CARE EXPENDITURES AND PRESCRIPTION DRUG EXPENDITURES IN PATIENTS WITH ALZHEIMER'S DISEASE

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OBJECTIVE: Health care expenditures in Medicare are highly concentrated in a small proportion of beneficiaries. The purpose of this study was to quantify the concentration and persistence of overall and prescription drug expenditures in individuals with Alzheimer's disease (AD) and to determine the characteristics associated with future expenditure levels. **METHODS:** Data were obtained from the 1999–2004 Medicare Current Beneficiary Survey linked with Medicare claims. Elderly, community-dwelling individuals with AD were rank-ordered by overall and drug expenditures. The proportion of expenditures accounted for by the top 10%, top 25% and top 50% of spenders was calculated. A transition probability matrix was used to illustrate the change in expenditure percentiles from one year to the next. Ordered logit models incorporating prior expenditure, Charlson Comorbidity Index, functional status and other background covariates were performed to predict the level of subsequent-year expenditures. **RESULTS:** The top 10% of spenders accounted for 38%–47% of overall health expenditures and incurred 31%–36% of overall drug expenditures depending on the year. One-quarter of the highest-spending 10% for total health expenditures remained in the top decile in the next year, whereas 21% of them moved to the bottom half in the subsequent year. Half of the highest 10% of drug spenders retained this ranking and 9% moved to the bottom 50% in the next year. Prior expenditures and Charlson comorbidity scores, but not functional status, were strong predictors of the level of future expenditures. **CONCLUSION:** Overall health care and drug expenditures were highly concentrated and persistent over a two-year period in this AD population. Prescription drug expenditures exhibited less concentration but more persistence than did overall health expenditures. Results from this study may further our knowledge of how expected high expenditures in AD patients may be reduced with improved care coordination and effective case management.

PND17

SEVERITY OF ILLNESS AMONG PERSONS WITH AND WITHOUT MULTIPLE SCLEROSIS: AN ANALYSIS OF COST QUINTILES

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Retrospective claims databases often lack disease severity measures. As a proxy for illness severity, a quintile analysis of employees with multiple sclerosis (MS) was conducted. A 2001–2007 U.S. health care claims database was used to identify employees with MS (ICD-9 code=340.XX). Subjects were followed for 1 year after their index dates, based on the first disease-modifying therapy (DMT) prescription (IFNâ-1a [SC or IM], IFNâ-1b, or glatiramer acetate) or for those with no therapy, the average date of those treated. MS-specific medical costs were defined as total claims costs with primary ICD-9=340.XX. MS-specific drug costs were defined as all DMT expenditures. Employees were rank ordered by MS-specific (medical and drug) costs and assigned to cost quintiles. In total, 765 employees with MS were analyzed, and 71.9% (n = 550) with lowest cost (Quintile 1) incurred $1593 in MS-specific (medical and drug) costs/employee. Quintiles 2–4 (8.9%, 8.0%,

and 6.8% of patients, respectively) incurred MS-specific costs of $12,830, $14,348, and $17,028/employee, respectively. Finally, employees in Quintile 5 (highest cost, 4.4%, n = 34) incurred MS-specific costs of $26,048/employee. Only 18% of Quintile 1 had DMT, all subjects in Quintiles 2–4 used DMTs, and 8.8% of Quintile 5 used no DMTs. Although not used for quintile assignments, "other conditions" costs/employee were higher in higher cost quintiles, and Quintile 5 non-MS drug costs/employee were 6.1–8.6 times higher than Quintiles 1–4. Similarly, indirect costs were generally higher in the more expensive quintiles. Average ages were similar between quintiles. Quintile 5 was only 47.1% female, while other quintiles were >60% female. Wide variation in MS-specific and non-specific costs exists among employees with MS. However, patients in the highest cost quintile may have the most severe disease, suffer from multiple conditions and receive other drug treatments. Further investigation is needed to understand the impact of comorbid conditions on severity.

PND18

HIGHER INPATIENT COSTS AMONG PATIENTS WITH SUBARACHNOID HEMORRHAGE COMPLICATED BY VASOSPASM

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OBJECTIVE: Vasospasm is a common complication of aneurysmal subarachnoid hemorrhage (SAH), but its economic impact has not been studied. In this study, we estimated the incremental impact of angiographic and clinical vasospasm on inpatient costs and length of stay (LOS) in a cohort of patients hospitalized for SAH. **METHODS:** The study cohort consisted of 198 consecutive patients who underwent either endovascular or surgical treatment for SAH at Duke University Medical Center (DUMC) from February 1999 to October 2004. Patients were divided into three subgroups: clinical (+angiographic) vasospasm (n = 64), angiographic vasospasm only (n = 51), and patients without vasospasm (n = 83). Direct and overhead inpatient costs were obtained from the DUMC cost accounting system. Costs for physician services were assigned using 2006 Medicare reimbursement rates for North Carolina based on CPT codes billed for physician services provided to patients in the study cohort. Generalized linear regression models were applied to assess the incremental impact of vasospasm on inpatient costs and LOS while adjusting for potentially confounding variables. A counterfactual approach was applied to estimate the adjusted mean cost difference between subgroups defined by the presence or absence of vasospasm. **RESULTS:** The adjusted incremental cost attributable to clinical vasospasm was $41,877, a 41% increase relative to no vasospasm (95% CI: 23–62%, $p < 0.0001$). Angiographic vasospasm was associated with a $24,528 incremental cost, a 24% increase (95% CI: 7–44%, $p = 0.0043$). LOS was estimated to be 6.3 days or 39% longer with clinical vasospasm (95% CI: 21–61%, $p < 0.0001$), and 4.5 days or 28% longer with angiographic vasospasm (95% CI: 9–50%, $p = 0.0026$) relative to no vasospasm. Higher costs related to vasospasm remained significant after adjusting for differences in LOS. **CONCLUSION:** Patients with clinical and/or angiographic vasospasm incur higher inpatient costs than those without due to longer hospital stays and receipt of higher intensity care.

PND19

THE ECONOMIC IMPACT OF ACUTE MEDICATION OVERUSE AMONG PATIENTS WITH MIGRAINE OR HEADACHE: A MANAGED CARE PERSPECTIVE

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OBJECTIVE: To determine the economic impact of acute medication overuse among members with migraine or headache enrolled in a large, national managed care organization (MCO). **METHODS:** Commercial MCO members with a diagnosis of migraine or headache and acute medication prescriptions from 2002–2006 comprised the study population. A novel claims-based algorithm based on literature review and clinical expert input was created to establish thresholds of potential overuse. Two cohorts were identified: members with evidence of acute medication overuse (MO) and members without evidence of medication overuse (non-MO). Cohorts were followed over variable time periods and compared on demographics, comorbidities, health care resource utilization and costs. **RESULTS:** A total of 17,202 individuals met the criteria for medication overuse, 45,659 comprised the non-MO cohort. Most MO patients met the criteria for medication overuse by exceeding the threshold for opiates (62%) or triptans (38%). The MO cohort had significantly greater migraine/headache-related and all-cause resource utilization compared with the non-MO cohort. On a per subject per month basis, all-cause medical costs for the MO cohort were $1236 compared with $185 for the non-MO cohort (<0.0001); all-cause pharmacy costs were $483 for the MO cohort and $105 for the non-MO cohort (<0.0001). For migraine/headache-related medical and pharmacy costs, total medical costs per subject per month were $209 for the MO cohort and $33 (<0.0001) for the non-MO cohort, while pharmacy costs were $286 for the MO cohort and $46 (<0.0001) for the non-MO cohort. **CONCLUSION:** Members of this MCO with migraine or headache who overused acute medications utilized more health care resources and incurred greater costs compared with members without acute medication overuse. These results suggest the possibility that alternate treatment strategies that decrease medication overuse may result in less health care resource utilization and lower costs.

PND20

ECONOMIC CONSEQUENCES OF MULTIPLE SCLEROSIS: A POPULATION-BASED STUDY

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OBJECTIVE: Little is known about medical expenditures in the multiple sclerosis population after the introduction of expensive disease modifying agents in the 1990s. This study examines new data from 2000–2005 population-based survey of MS to provide estimates of health services utilization by disease severity and controlling for other risk factors. **METHODS:** We used a subsample (n = 919) of patients with relapsing remitting and secondary progressive MS from the Sonya Slifka Longitudinal Multiple Sclerosis Study that follows a nationally representative cohort of MS patients. We examined utilization of hospital and outpatient care, emergency room (ER), therapy, mental health services, alternative medicine, home health and personal care. For most utilization categories, we used log-linear negative binomial regression models to estimate mean utilization, accounted for possible correlation of observations for the same person by using