primary insomnia and the relative risk of the health consequence in persons with versus without insomnia. Based on published sources, we estimated the prevalence of chronic primary insomnia to be 2.3% and relative risks to be as follows: car crashes, 2.3; work accidents, 1.5; home/public accidents, 2.5; alcohol abuse, 2.3; illicit drug abuse, 1.9; nicotine dependency, 2.4; and depression, 5.4. RESULTS: Total annual societal cost of chronic primary insomnia in the U.S. was estimated to be US$24.6 billion in 2003. Depression accounted for the largest share of the cost burden (34%), followed by alcohol abuse (25%), nicotine dependency (20%), drug abuse (14%), work loss (6%), accidental injuries (2%), and prescription insomnia medications (1%). Sensitivity analysis indicated the findings were most sensitive to the prevalence of chronic primary insomnia and the relative risk of illicit drug abuse. CONCLUSIONS: The economic burden of chronic primary insomnia is substantial. Reducing the severity and prevalence of chronic primary insomnia may yield considerable economic benefits.

OBJECTIVES: Although studies have explored the utilization of healthcare services in patients with restless leg syndrome (RLS), expenditure data are not available. This study assesses the incremental economic burden of illness with RLS. METHODS: A retrospective claims database analysis was conducted using Medstat's MarketScan Commercial Claims and Encounters database from 1999 through 2003. Patients were identified having ≥ 1 RLS diagnosis (ICD-9 333.99) with the earliest claim as the index event. Inclusion criteria required continuous enrollment 6 months pre- and 12 months post-index event. Patients were excluded if they were identified as having Parkinson's disease, post-traumatic neurosurgery, or psychiatric conditions (other than depression and insomnia); or if they had a drug claim in the pre-index period for levodopa, dopamine agonists, opioids, anticonvulsants, amantadine or clonidine. A control group without a diagnosis for RLS and similar inclusion/exclusion criteria as the RLS group was selected using a 1:1 propensity score match. Post-index outcomes included health care utilization and expenditures (2003 dollars), along with multivariate analysis used to determine the incremental economic burden associated with RLS. RESULTS: The RLS group consisted of 2319 patients with an average age of 49.8 years and was 64% female. In the post-index period, RLS patients had higher total expenditures than controls ($8843 vs $4378), with highest costs from outpatient services ($4549 vs $2144, respectively). In the multivariate analysis, the incremental difference in overall expenditures between the RLS cohort ($7257) and controls ($4809) was $2448 (p < 0.001). CONCLUSIONS: Expenditures for RLS treated patients are significantly higher when compared to a matched, control cohort of patients, with the highest costs coming from outpatient services. More research is warranted to identify if there are ways to decrease these additional costs while maintaining or improving treatment of patients with RLS.

OBJECTIVES: To estimate the direct healthcare cost burden of migraine in a large commercially insured United States (US) population. METHODS: The data source for this study was the MEDSTAT MarketScan database, comprised of medical, pharmaceutical, and enrollment information on employees for 52 employer groups for the calendar year 2004. Subjects with a diagnosis of migraine or use of a migraine-specific abortive drug were identified as the migraine cohort. A random sample of patients without migraine was propensity score matched, based on demographic characteristics and comorbidity index, to the migraine cohort to yield a matched control group. Expenditures between migraine and matched control cohorts were compared to derive the burden of illness attributable to migraine. RESULTS: The analyses included 215,209 subjects in the migraine cohort, and equal number of subjects in the control group. The mean age was 41 (SD = 13.3), and 82% were female. After matching, the cohorts were similar with respect to age, gender, geographic region, urban residence, insurance type, the number of psychiatric diagnostic groups and Charlson comorbidity index. The migraine cohort incurred significantly higher expenditure than the control cohort in all categories (prescriptions, outpatient, ER, and inpatient). Total health care expenditures were $2371 per patient per year (PPPY) higher in the migraine group ($7007 versus $4436 PPPY in the control group; p < 0.001). CONCLUSIONS: The migraine cohort was associated with significantly higher total health care expenditures compared to a matched control, based on recent data from a large sample of commercially insured individuals. This data suggest that US employers are bearing a considerable direct cost burden as a consequence of migraine.

OBJECTIVES: To estimate the direct healthcare cost burden of restless legs syndrome (RLS) in a commercial managed care environment. OBSERVATION: Using a proprietary methodology developed by the MCM Group, administrative claims data (obtained from the PharMetrics Integrated Patient-centric Database) were combined with Symmetry Health's Episode Treatment Group (ETG) illness-classification and episode-building software. Patients were included in the study based by the presence of ETGs 149 or 150 (inflammation of the CNS) and diagnosis of MS (ICD-9 code 340.3) during any of calendar years 2002, 2003, or 2004. Clinical and economic information related to utilization of medical and pharmacy services was captured using ETG-defined episodes of care, consisting of observations made over 365 days. RESULTS: Over the 3-year study period, 41,425 patient-episodes were analyzed, with 10,099 analyzed for 2004. Total costs of a 2004 MS episode were $12,879, 65% of which were attributable to prescription drugs and more than 26% to outpatient care. Many variables affected episode costs, including concurrent conditions; for example, episode costs increased considerably whenever abnormality of gait ($20,871) or optic neuritis ($39,247) was present. In comparing episodes reporting use of DMDs, the various interferon product classes and other immunomodulators reflected
notable differences in episode costs and in the use of other classes of prescription drugs. CONCLUSIONS: The benchmark data presented here rests on a stable and credible foundation, and offer a unique and integrated perspective on the care of MS. While the information presented here may generate more questions than it can precisely answer, it has genuine value as a high-level starting point for more definitive pharmacoconomic studies.

NEUROLOGICAL DISORDERS—Health Care Use & Policy

PNL21

PATTERNS OF TOPIRAMATE UTILIZATION AMONG MEDICAID PATIENTS: DIAGNOSIS, COMORBIDITIES AND REAL-WORLD DOSING

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OBJECTIVE: To evaluate the patient characteristics, diagnosis/comorbidities, and real-world dosing among Medicaid patients prescribed topiramate. METHODS: A retrospective database analysis was conducted using South Carolina (SC) and Texas (TX) ambulatory Medicaid claims from October 1, 2003 through December 31, 2004. Patients were required to have ≥2 topiramate prescriptions during the study period and were required to be ≥65 years old. Patients were categorized into four cohorts: 1) epilepsy only; 2) migraine only; 3) epilepsy and migraine; and 4) neither epilepsy nor migraine. A comprehensive set of additional diagnoses, based on literature search, Micromedex compendium, and USPDI, was also examined. Demographic characteristics and average daily dose of topiramate (ADDoT) were summarized using descriptive statistics. RESULTS: During 2004, there were 2216 patients in SC Medicaid and 4766 patients in TX Medicaid meeting the study selection criteria. Mean (SD) age was 29.9 (15.9) in SC, and 27.1 (16.1) in TX. In SC, the cohort classification percentages were 32.3% (epilepsy only), 29.7% (migraine only), 10.7% (epilepsy and migraine), and 27.3% (neither epilepsy nor migraine). In TX, the cohorts were 39.6% (epilepsy only), 16.4% (migraine only), 9.2% (epilepsy and migraine), and 34.9% (neither epilepsy nor migraine). In the epilepsy only cohort, the most common diagnoses were bipolar disorder and depression. Mean (SD) ADDoT in the epilepsy only cohort was 205.2mg (157.5) [SC], 239.6mg (182.1) [TX]. The ADDoT in the migraine only cohort was 136.5mg (112.6) [TX]. The ADDoT in the epilepsy only cohort was 150.0mg (129.6) [TX]. CONCLUSION: This is the first study to examine patterns of topiramate use in two Medicaid populations. It revealed that topiramate was prescribed in a young population, and approximately 70% of patients had an epilepsy and/or migraine diagnosis.

NEUROLOGICAL DISORDERS—Methods and Concepts

PNL22

ESTIMATING THE COST OF NURSING HOME CARE FOR PATIENTS WITH PARKINSON’S DISEASE USING RETROSPECTIVE DATABASE ANALYSIS

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OBJECTIVES: The purpose of this study was to determine the cost of nursing home care for patients with Parkinson’s disease using retrospective database analysis. METHODS: The Medical Expenditures Panel Survey Nursing Home Component (MEPS-NHC) was used to estimate the cost of nursing home care for patients with Parkinson’s disease. A total of 5899 patients in 815 nursing facilities were sampled in the MEPS-NHC. Since the MEPS-NHC is only accessible through the Center for Financing, Access and Cost Trends (CFACT) located in Rockville, MD, it was necessary to apply to the CFACT Data Center and request access to the data. In order to analyze the MEPS-NHC data it was necessary to link multiple files together to create one file for analysis. The person level files (NHC001P, NHC-002, and NHC-003) were merged using the original person identification number (ORIGPERSID) and this resulted in the creation of one person level file. The facility level files (NHC-001F and NHC-003) were merged using the sample facility identification number (SFID) and this resulted in one facility level file. The SFID appeared in NHC-002 of the person level files and was used as the common variable to merge the single person level file and facility level files that were created into one final merged file. RESULTS: Using the patient weights assigned by MEPS-NHC, these 208 patients represented 99,989 Parkinson’s patients in nursing home facilities in the United States. The weighted total cost for nursing home care costs for patients with Parkinson’s disease in 1996 was $3.2 billion. The weighted total nursing home cost for males in 1996 was $1.14 billion and for females the weighted total cost was $2.08 billion. CONCLUSIONS: The estimate presented here highlights the need for future studies that identify the cost of nursing home care for other chronic disease states.

PNL23

CONTROLLING SELECTION BIAS ON CONTINUOUS VARIABLES

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OBJECTIVE: One of the disadvantages of propensity score matching is failure to apply on continuous variables. This paper proposes a method to control for selection bias when propensity score matching technique is not applicable. METHODS: The proposed method first uses continuous variable rather than a binary variable in the first stage estimation. Since non-treated patients will have zero use and treated patient will have positive use of treatment, Tobit regression is proposed to estimate treatment use. Second, using Tobit residuals in the second stage equation to estimating health care cost or utility, we showed that selection bias due heterogeneity of patients are removed. RESULTS: Market Scan data were used to estimate total health care expenditures of migraine patients treated by triptan. Number of triptan scripts is used to do matching rather than binary variable. Mean value for triptan scripts for treated patients were 4.37. After certain inclusion and exclusion criteria 43,776 migraine patient with triptan used created our analytic samples. We used same number of control patients. After controlling for demographic and clinical factors, we add Tobit residuals as an additional variable in to our health expenditure model. Significance of coefficient on residuals showed that selection bias exists and failure to account for that bias would yield spurious results. CONCLUSIONS: Propensity Score matching may not be applied in certain situations. This paper examined a case where selection was due to continuous variable and proposed and applied a technique under this circumstance.