was for prescription medications, at $747,551,471 (mean = $59.87; 95% CI = $51.95–$67.78). Office-based medical provider visits were $339,946,065 (mean = $73.50; 95% CI = $60.20–$86.80). Emergency department visits were approximately $110 million while outpatient services, inpatient stays, and home health services were each below $100 million. CONCLUSIONS: The cost of treating a migraineur was estimated to be $293 in 1999, nearly 3 times higher than $100 reported in 1994. However, total direct costs in 1999 were $1.5 billion, only 50% higher than $1 billion reported in 1994. Prescription expenditures at greater than 50% of direct costs were a major factor in the increase in incident cost. The rate of increase in total costs was less than the rate of increase in incident costs, suggesting either greater drug efficacy or reduced use of more costly medical care alternatives.

**ECONOMIC ANALYSIS OF ACUTE MIGRAINE THERAPY UTILIZATION WITHIN THE WISCONSIN STATE MEDICAID POPULATION**

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OBJECTIVES: There is a wide array of pharmacological agents available for the acute treatment of migraine headache. The 5-HT1B/1D receptor agonists (triptans), ergotamine derivatives, and isometheptene/dichlo- laphenazon combination products represent the most frequently prescribed migraine-specific therapies. Our objective is to describe the costs and explore the utilization patterns of migraine-specific therapies in the Wisconsin Medicaid population. METHODS: Wisconsin Medicaid drug utilization data for 2001 was used. These data were obtained directly from the Centers for Medicare & Medicaid Services website. National Drug Codes were used to extract quarterly utilization data for products belonging to three classes of acute migraine therapies (triptans, ergotamine derivatives, and isomethep- tene/dichloralphenazon combination products). Analysis of utilization was performed for each quarter of 2001 by aggregating the amount and number of claims reimbursed across products. Further analysis was conducted to examine the average cost per claim between pharma- cological classes and individual triptan therapies. RESULTS: In 2001, the Wisconsin Medicaid program reimbursed acute-migraine drug treatment claims totaling $2,372,463.66, representing 15,120 prescription claims. Most of this expenditure (98.3%/$2,331,090.71) was a result of triptan claims, with 1.5% ($34,715.25) and 0.2% ($6,657.70) representing ergotamine derivative and isometheptene/dichloralphenazon combination product claims, respectively. Within the triptan class, sumitriptan (9,122/$1,599,212.19), rizatriptan (2,388/$306,947.59) and zolmitriptan (1,877/$264,947.76) composed the first, second, and third most utilized products. Cost per claim values within the oral triptans varied greatly with a high of $180.72 (sumitriptan) and a low of $81.51 (almitriptan).

**CONCLUSION:** In the Wisconsin Medicaid population, utilization of migraine-specific therapies was weighted heavily towards the triptans. With the large variation in claims cost among oral triptans, considerable cost savings could be realized if a system was implemented to increase utilization of newer, second-generation triptans (non-sumatriptan) as first-line therapy. However, such a clinical decision should be supported by comparative clinical trial data that supports equivalent or superior efficacy to sumatriptan.

**ARE ELDERLY PATIENTS RECEIVING APPROPRIATE ANTIEPILEPTIC DRUGS?**

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OBJECTIVE: Clinical recommendations advocate use of carbamazepine, lamotrigine, and gabapentin rather than phenobarbital and phenytoin for treating older patients with epilepsy. We describe prescribing patterns for older veterans newly diagnosed with epilepsy, determine if practice is consistent with clinical recommendations, and describe those at greatest risk of receiving these potentially inappropriate antiepileptic drugs (AEDs).

METHODS: Retrospective national inpatient, outpatient, and pharmacy data from the Veterans Health Administration (VA), were used to identify veterans ≥64 years with an epilepsy diagnosis during fiscal year 1999 (FY99) who also received AEDs from the VA in FY99. Patients who were seen in the VA during FY97-98 with no previous diagnosis of epilepsy were selected. We identified patients’ AED regimen for FY99, demographic characteristics, neurology consultations, and disease severity. We used logistic regression to identify patients most likely to receive phenobarbital and phenytoin. RESULTS: Eighty-five percent received monotherapy. Ten percent of patients received regimens containing phenobarbital, 68% received regimens including phenytoin, and 25% received only recommended AEDs. Logistic regression analyses indicated that patients with more severe disease were less likely to receive phenobarbital monotherapy than other monotherapy (OR: 0.47, 95% CI 0.22–0.98) and phenobarbital combinations than other combinations (OR: 0.29, 95% CI 0.13–0.70). Patients receiving neurology consultation were less likely to receive pheno- toin monotherapy than monotherapies consistent with clinical recommendations (New OR: 0.49, 95% CI 0.39–0.61). CONCLUSIONS: A surprising number of newly diagnosed veterans received phenobarbital despite its well known adverse effects. Moreover, our finding that nearly 70% receive phenytoin is not consistent with
recent recommendations for epilepsy care in the elderly. Research is needed to identify why new patients receive phenobarbital. The vast use of phenytoin suggests research evaluating the impact of phenytoin and other AEDs on the elderly in actual practice may be needed to facilitate adoption of recent clinical recommendations.

EMPLOYER PERSPECTIVES

THE IMPACT OF AN ALLERGY MANAGEMENT PROGRAM ON LOST PRODUCTIVE TIME AT WORK

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OBJECTIVES: Allergies and many sedating over-the-counter (OTC) allergy medications have been shown to have a significant and negative impact on lost productive time at work. We examine the impact of an allergy program designed to reduce sedating allergy medication use and its impact on employee-reported lost productivity within a large southern California medical group.

METHODS: A baseline questionnaire designed to measure allergy symptoms, severity, treatment strategies, and disease burden was distributed to 712 employees in November 2001 with a follow-up questionnaire sent in November 2002. We calculated change in self-reported productive time lost due to allergy related full and partial missed days, and presenteeism (lower productive time while at work) from merged baseline and follow-up data. Interventions included recommended treatment guidelines that were developed and distributed to all physicians and clinics. Employees were encouraged to discuss their allergy medications and treatment strategies with their physicians and were provided access to a corporate Intranet site for additional allergy-specific information.

RESULTS: Response rates of 85% and 58% were achieved at baseline and 1-year follow-up. In addition, 59% of allergic employees participated in the program with 44% reporting visiting a doctor and 28% using the Intranet. Sedating OTC medication use dropped from 38% to 21% (p < .0001). Allergy specific average monthly hours missed decreased due to presenteeism (7.2 hours; p < .0001) and overall (5.5 hours; p = .0076) per allergic employee. Average monthly hours missed increased due to full days (1.1 hour) and partial days (.06 hour) but were not statistically significant. CONCLUSIONS: While allergies account for a significant number of lost productive work hours, an allergy program can successfully reduce sedating medication use, consequent disease burden, and lost productive work time. Projected annually, appropriate treatment of allergy symptoms resulted in cost savings of approximately $1254 per allergic employee.

COST ANALYSIS OF HEPATITIS C VIRUS (HCV) INFECTION: AN EMPLOYER’S PERSPECTIVE

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OBJECTIVE: With improvements in therapy, HCV disease progression can be better controlled and a greater number of infected patients are able to remain in the workforce. This analysis quantifies the incremental direct (medical, drugs) and indirect (absenteeism, disability) costs of HCV from an employer’s perspective.

METHODS: Based on eligibility, medical, pharmacy and disability claims data from seven major US employers covering January 1, 1998 through June 30, 2001, we identified 833 HCV infected patients having at least 2 claims with a HCV ICD-9 diagnosis code less than 90 days apart, ribavirin and interferon combination therapy, a confirmatory HCV lab test followed by a HCV diagnosis, or a HCV diagnosis coupled with non-alcoholic cirrhosis, hepatocarcinoma, liver transplantation, or cryoglobulinemia. A 10% random sample of 148,166 uninfected individuals was chosen as controls. Employer costs resulted from direct medical costs and employee productivity loss. A tobit regression, which corrects for non-normality of costs, included controls for age, gender, health plan, location, alcohol abuse, HIV status, and illicit drug use.

RESULTS: The unadjusted ratio of mean direct costs for HCV infected patients compared to uninfected patients was 7.9:1 ($857.4 vs. $108.1 per patient-month, p < .01). The ratio for indirect costs was 4.0:1 ($88.7 vs. $22.3 per patient-month, p < .01). After controlling for confounding factors, the ratios were 5.6:1 (95% CI: 5.6–5.7) for direct costs, and 8.1:1 (95% CI: 7.9–8.4) for indirect costs. Regressions on sub-categories yielded costs ratios for inpatient care, outpatient care, prescription drugs, absenteeism, and disability (short and long-term) of 5.3:1 (95% CI: 5.2–5.4), 5.0:1 (95% CI: 5.0–5.1), 7.5:1 (95% CI: 7.4–7.5), 5.5:1 (95% CI: 5.4–5.7), and 10.0:1 (95% CI: 9.2–10.8), respectively. CONCLUSION: Both the unadjusted and adjusted cost ratios for HCV infected patients compared to uninfected patients indicate that infection results in statistically significant increases in both direct and indirect costs to the employers.

WORK LOSS AND HEALTHCARE UTILIZATION AMONG U.S. EMPLOYEES WITH CHRONIC NON-CANCER PAIN

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OBJECTIVES: Allergies and many sedating over-the-counter (OTC) allergy medications have been shown to have a significant and negative impact on lost productive time at work. We examine the impact of an allergy program designed to reduce sedating allergy medication use and its impact on employee-reported lost productivity within a large southern California medical group.

METHODS: A baseline questionnaire designed to measure allergy symptoms, severity, treatment strategies, and disease burden was distributed to 712 employees in November 2001 with a follow-up questionnaire sent in November 2002. We calculated change in self-reported productive time lost due to allergy related full and partial missed days, and presenteeism (lower productive time while at work) from merged baseline and follow-up data. Interventions included recommended treatment guidelines that were developed and distributed to all physicians and clinics. Employees were encouraged to discuss their allergy medications and treatment strategies with their physicians and were provided access to a corporate Intranet site for additional allergy-specific information.

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