the proportion of patients treated for RLS in a large claims database. METHODS: We identified patients with at least one RLS diagnosis (ICD-9 333.99) between 1999 and 2003 in Medstat’s MarketScan Commercial Claims and Encounters database of de-identified insurance claims from employees and dependents. We estimated treated RLS by calculating the proportion of patients in the database with a first-time RLS diagnosis (incidence) and with an RLS diagnosis anytime (prevalence). RESULTS: Incidence of RLS treatment increased slightly each year, from 0.3402 per 1,000 persons in 1999 to 0.4494 per 1,000 in 2003. Prevalence also rose, reaching 0.5411 per 1,000 in 2003. Prevalence rates per 1,000 in 2003 by age group were: ages 1–17, 0.0330; ages 18–34, 0.1845; ages 35–44, 0.5848; ages 45–54, 1.0049; and ages 55–64, 1.3069. Prevalence for women per 1,000 was 0.6576 compared to 0.4126 for men. US geographic regions with the highest rates were North Central (0.6842) and South (0.5686), with lower rates seen in Northeast (0.4074) and West (0.4172). Higher rates of RLS (1.8621 vs. 0.3259 per 1000) were found among patients who had any characteristic that put them at “high risk” for RLS (anemia, end-stage renal disease, diabetes, rheumatoid arthritis, pregnancy or SSR1 use). CONCLUSIONS: Rates of treated RLS were higher among older patients, women, and those with “high risk” factors, consistent with previous research. Compared to RLS prevalence estimates from population-based studies, rates were low in our sample. Additional research may help to understand the large differences in these prevalence estimates.

HOSPITAL LENGTH OF STAY ASSOCIATED WITH ANTICONVULSANT UTILIZATION BY PATIENTS WITH SEIZURE DISORDERS IN THE U.S.
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OBJECTIVES: Comparing length of stay by anticonvulsant therapy may be the first step to identifying adverse events associated with treatment as well as treatment effectiveness. This study attempts to determine the association between the hospital length of stay and the use of anticonvulsants by inpatients with seizure disorders. METHODS: A cohort of 126,362 patients admitted to U.S. hospitals from July 1, 2004 to June 30, 2005 with a diagnosis of seizure or epilepsy was constructed using data from Premier’s Perspective Comparative Database. Anticonvulsant use was tracked throughout each patient’s hospital stay and patients were categorized by drug into carbamazepine, clonazepam, divalproex, fosphenytoin, gabapentin, lamotrigine, magnesium, oxcarbazepine, phenytoin, topiramate, valproic acid, levetiracetam, and other anticonvulsants groups. Descriptive statistics including demographic characteristics and drug utilization were reported for the sample. Mixed regression models were used to control for selection bias due to patient clustering within hospitals. The model observed the impact of anticonvulsant monotherapy by drug on length of stay. RESULTS: Mean length of stay for non-users was 5.63 (SD = 9.02) and drug users ranged between topiramate users with 5.42 (SD = 6.20) and magnesium users with 12.99 (SD = 18.27). Clonazepam (t = 5.41, p < 0.0001), divalproex (t = 5.09, p < 0.0001), gabapentin (t = 7.25, p < 0.0001), magnesium (t = 40.76, p < 0.0001) and phenytoin (t = 7.58, p < 0.0001) were significantly associated with length of stay while controlling for race, gender, age, severity of illness and admission status. CONCLUSIONS: Further analysis should investigate patterns of events associated with increased length of stay in patients taking clonazepam, divalproex, gabapentin, magnesium, and phenytoin for identification of potential adverse events.

NEUROLOGICAL DISORDERS—Cost Studies

COMPARING THE RELATIVE COST-EFFECTIVENESS OF ORAL PROPHYLACTIC MEDICATION VS. BOTULINUM TOXIN TYPE A (BOTOX®) IN THE MANAGEMENT OF MIGRAINE HEADACHE: A MODEL EVALUATING THE CLINICAL AND ECONOMIC IMPACT OF CURRENT TREATMENT OPTIONS
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OBJECTIVES: The oral prophylactic medications currently utilized in the management of migraine headache have been shown to exhibit varying responsiveness in terms of reduction of headache burden. It is the objective of this model to be used as a tool to compare the relative cost-effectiveness (CE) of these agents vs. botulinum toxin type A (BOTOX®/BTX-A) from a payer perspective. METHODS: An interactive Excel-based model was developed to compare the relative CE of the available oral prophylactic medications vs. BTX-A in the treatment of migraine headache. Drug effectiveness with respect to reduction in headache burden and utilization of acute medications was based on the published literature. Drug costs were based on average wholesale price with consideration of contractual discounts and patient co-payment. The primary economic endpoints were the drug cost per headache (HA) and headache day (HAD) for episodic migraine and chronic migraine respectively. Multi-factor sensitivity analyses were conducted. RESULTS: In the management of episodic migraine, the oral prophylactic medications offered a cost per HA avoided varying from US$48 (divalproex sodium/Depakote®) to US$138 (gabapentin/Neurontin®). In the management of chronic migraine, BTX-A offered a cost per HAD avoided of US$17. Total migraine related drug costs (inclusive of both acute and prophylactic medications) were found to be unchanged with the utilization of BTX-A due to the offsetting reduction in acute medication use associated with BTX-A therapy. CONCLUSION: Modeling CE in terms of reduction in headache burden provides a methodology for comparing clinical trials and demonstrates that the relative difference in CE between the oral prophylactic medications and BTX-A in the management of migraine headache is significant.
wholesale acquisition cost with consideration of contractual discounts and patient co-payment. The primary economic endpoint was cost per relapse avoided over a 4-year period of treatment.

RESULTS: The ARR varied across the five DMDs with interferon beta-1a SC injection (Rebif®) showing the highest results (0.72) and interferon beta-1a IM injection (Avonex®) the lowest (0.26). Economic results showed significant difference in the cost-effectiveness ratio (CER) among the DMDs, with interferon beta-1a SC injection (Rebif®) having the most favorable CER (US$47958/relapse avoided) and interferon beta-1a IM injection (Avonex®) having the least favorable (US$121,147/relapse avoided). Interferon beta-1b SC injection (Betaseron®), glatiramer acetate SC injection (Copaxone®), and natalizumab IV injection (Tysabri®) offer intermediate CER results of US$48,345, US$68,440, and US$93,903 per relapse avoided, respectively. CONCLUSION: Modeling absolute reduction in clinical endpoints provides a methodology for comparing clinical trials and demonstrates that the difference in cost-effectiveness results among the DMDs is significant.

EXAMINATION OF THE COST-EFFECTIVENESS OF DOPAMINE AGONISTS FOR THE TREATMENT OF RESTLESS LEGS SYNDROME

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OBJECTIVE: To examine the cost-effectiveness of ropinirole for the treatment of primary restless legs syndrome (RLS) versus the alternative off-label therapies of pramipexole and pergolide.

METHODS: A cost-effectiveness analysis was conducted from the societal perspective using a cohort of 10,000 United States adults 45 years old and older with moderate-to-severe primary RLS. A decision tree was used to model cost-effectiveness for a two-year period following commencement of dopamine agonist therapy. Outcome probabilities were obtained from a systematic review of randomized controlled trials and observational studies. Costs were derived from standard 2005 health care cost references. Cost-effectiveness decision models were created for base-case analyses. One-way and probabilistic sensitivity analyses were conducted to test the robustness of the findings. RESULTS: In terms of changes in the International Restless Legs Syndrome Study Group Rating Scale (IRLS) score for RLS severity, pergolide dominates ropinirole given the base-case. Pergolide is cost-saving when compared to both ropinirole and pramipexole, resulting in a saving of $1687 and $556 per one-point improvement in IRLS score. One-way sensitivity analyses indicated that the IRLS scores for augmentation strongly influenced the calculated incremental cost-effectiveness ratios (ICERs). Probabilistic sensitivity analyses revealed variation in the results indicating a lack of clear dominance. CONCLUSIONS: None of the therapies is clearly dominant in terms of cost per IRLS score change. Although ropinirole is currently the only U.S. Food and Drug Administration (FDA) approved medication for the treatment of RLS, it is not more cost-effective than alternate off-label dopamine agonists prescribed for RLS.

COST-EFFICACY ANALYSIS OF MULTIPLE SCLEROSIS THERAPIES: ASSESSING THE IMPACT OF NEUTRALIZING ANTIBODIES

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OBJECTIVE: To determine the effect of neutralizing antibodies (NAbs) on the cost-effectiveness of disease-modifying agents (DMAs) used to treat multiple sclerosis (MS). METHODS: A cost-effectiveness model was developed using relapse rate and disability progression endpoints from pivotal phase III trials of currently approved DMAs for MS (interferon beta-1a IM [Avonex], IFNB-1a SC [Rebif], IFNB-1b [Betaseron], and glatiramer acetate [GA; Copaxone]). The model was created from a managed care perspective with time horizons of 24 and 48 months. Cost-effectiveness is expressed as a ratio of total utilization costs per percent relative risk reduction for relapses and disability progression; daily cost-effectiveness is shown as per percentage point reduction. The incidence of NAbs and their effect on efficacy was obtained from prescribing information, open-label extension studies of IFNB products, and a large population study. The model includes the following assumptions: comparison of similar endpoints across different clinical trials; constant adverse event rates among products; constant burden of relapse over time; constant persistence/compliance rates among products; similar laboratory testing/frequency among IFNB products. A one-way sensitivity analysis was conducted to test the robustness of the model to changes in NAb incidence. RESULTS: At 24 months, the cost-effectiveness for disability progression was $824 ($1.13/day) for IFNB-1a IM, $1222 ($1.67/day) for IFNB-1a SC, $1150 ($1.57/day) for IFNB-1b, and $2558 ($3.50/day) for GA. At the development of NAbs, 48 months cost-effectiveness was $1659 ($1.14/day) for IFNB-1a IM. IFN-1b was the most cost-efficacious DMA before (24 months) and after (48 months) the development of NAbs. CONCLUSIONS: NAbs reduce the cost-effectiveness of IFNB products. IFN-1a IM (Avonex) was the most cost-efficacious DMA before (24 months) and after (48 months) the development of NAbs.

ASSESSING THE COST-EFFECTIVENESS OF IMMUNOMODULATORY THERAPIES FOR RELAPSING-REMITTING MULTIPLE SCLEROSIS BASED ON LONG-TERM DATA

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OBJECTIVES: Using long-term follow-up data from clinical trials, this analysis assesses the cost-effectiveness of five treatment strategies in patients diagnosed with relapsing-remitting multiple sclerosis (RRMS): symptom management alone (SMA) and symptom management combined with subcutaneous glatiramer acetate (SCGA), intramuscular interferon beta-1a-1a (IM-IFNB1-a), subcutaneous interferon beta-1a (SC-IFNB1-a), or subcutaneous interferon beta-1b (SC-IFNB1-b). METHODS: A literature-based Markov model was developed to assess the cost-effectiveness of five treatment strategies for managing a hypo-