

PRSI1

PREDICTORS OF ANTIHISTAMINE PRESCRIPTION IN THE NATIONAL AMBULATORY POPULATION WITH ALLERGIC RHINITIS

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OBJECTIVES: Antihistamines have been reported to be the most widely used drug category in the treatment of allergic rhinitis despite the recommendation to use intranasal steroids (INS) as the first line therapy. The purpose of this study was to examine the predictors of receiving an antihistamine prescription in ambulatory care setting in the United States. **METHODS:** A retrospective, cross-sectional study of the data from National Ambulatory Medical Care Survey (2006, 2007) was performed. Variables examined included whether the physician was a primary care physician, age (children: 0–18 yrs vs adults), gender, race, geographic region, metropolitan statistical area, major reason for visit (chronic vs non chronic), insurance status, patient visit status and presence of co-morbidity (asthma, nasal polyps, sinusitis and COPD). Allergic rhinitis visits were identified using ICD9-CM codes, and prescribed medications using the Multum Lexicon codes. Covariates were selected based upon the Anderson Behavior Model. Descriptive statistics and multivariate logistic regression were carried out to identify predictors of receiving an antihistamine prescription. **RESULTS:** A total of 40.56 million ambulatory office visits were diagnosed with allergic rhinitis. Antihistamines were prescribed in 45.6% (18.52 million) of these visits. Multivariate analysis showed that, children suffering from allergic rhinitis were 1.6 times more likely (OR 1.611, 95% CI 1.067–2.432) to receive a prescription of anti histamines than adult patients. Physician specialty, insurance status, geographic region and presence of comorbidity were not found to be significant predictors of an antihistamine prescription. **CONCLUSIONS:** The result of this study suggests that patient's age is a significant predictor of antihistamine prescription. This may partly be explained by the intranasal route of administration for the recommended first line therapy (INS) which may be difficult in children. Future research is needed to evaluate other factors like patient socioeconomic status and disease severity, which could not be assessed due to data limitation.

RESPIRATORY-RELATED DISORDERS – Cost Studies

PRSI2

PULMONARY REHABILITATION: A BUDGET IMPACT MODEL TO EVALUATE HOW POLICY CHANGES WILL IMPACT REIMBURSEMENT FROM A MANAGED CARE PERSPECTIVE

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OBJECTIVES: Before January 1, 2010 there was no procedural code for pulmonary rehabilitation (PR). The Department of Health and Human Services (DHHS) hypothesizes that Current Procedural Terminology (CPT) codes for cardiovascular rehabilitation (93797, 93798) and Healthcare Common Procedure Coding System (HCPCS) codes for respiratory therapy (G0237, G0238) may be utilized to reimburse for PR services, since the services are similar in labor and resource utilization. A budget impact model was developed to compare the previous PR reimbursement cost with the proposed reimbursement cost using new HCPCS code (GXX30) effective from January 1, 2010. **METHODS:** A budget impact model was built using Microsoft Excel (1-year time horizon). A 10% sample from IMS Life Link Health Plans Claims was used to identify patients who were recipient of PR services as well as cost data for the model inputs. A major assumption was that a patient will receive an average of 2.5 PR sessions/week based on DHHS. Primary and secondary outcomes were savings Per Member Per Month (PMPM) and savings per Treated PMPM, respectively. One-way sensitivity analyses were conducted to test the robustness of study results and assumptions. **RESULTS:** A total of 69 patients were identified as recipients of PR services. The PR services were reimbursed at a weighted average of \$32.24/claim for an average of 15.33 minutes/claim. The new HCPCS code (GXX30) will reimburse \$22.20 for a minimum of 60 minutes. A PR program lasting 6 weeks (average of 2.5 sessions/week), results in a cost savings of \$0.86 PMPM based on the new HCPCS code for PR. **CONCLUSIONS:** The changes in coding and reimbursement proposed by DHHS for 2010 will likely result in a cost savings for Managed Care Organizations to provide reimbursement for PR services; however, generation of HCPCS code GXX30 may drive utilization for PR services.

PRSI4

THE IMPACT OF ASTHMA ON HEALTH CARE UTILIZATION AND EXPENDITURE OF PEDIATRIC PATIENTSSong X¹, Shenolikar R², Costa LA³, Anderson J⁴, Chu BC⁵

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OBJECTIVES: The study objective was to evaluate direct costs associated with pediatric asthmatic patients in the US. **METHODS:** Asthma patients with ≥ 1 primary asthma diagnosis, or ≥ 1 asthma diagnosis any level and ≥ 1 asthma prescription, or ≥ 2 asthma diagnoses any level between January 2003 and December 2005 in the MarketScan® Commercial Database were extracted. Patients were required to be 4–17 years old and continuously enrolled 12-month before and 12-month post index date (first asthma diagnosis or medication claim). Patients with evidence of emphysema or chronic obstructive pulmonary disease during the study period were excluded. The

control cohort consisted of patients aged 4–17 years with no asthma claim who met the same inclusion/exclusion criteria. An index date was assigned to controls by adding a number to January 2003 that was randomly drawn from a pool of days between January 2003 and index date for each asthma patient. Propensity score techniques were used to match asthma patients to controls based on baseline demographic and clinical characteristics. Multivariate regressions were conducted on matched samples to estimate the marginal impact of asthma on costs. **RESULTS:** A total of 91,199 pediatric asthmatic patients were matched to 91,199 pediatric non-asthmatic patients. Compared with matched non-asthmatic patients, asthmatic patients included a slightly larger proportion of males, were younger and had lower comorbidity. After multivariate adjustment, asthmatic patients on average incurred \$841 more in total medical costs, \$438 more in outpatient prescriptions, \$186 more in outpatient costs, \$95 more in Emergency Department visits, and \$128 more in hospital admissions (all $p < 0.001$) in a year. **CONCLUSIONS:** Pediatric patients with asthma experienced significantly greater medical and pharmacy costs than patients without. Understanding disease burden for pediatric patients is key to efficiently utilizing health management interventions to decrease costs and potentially improve quality of life for both patients and caregivers.

PRSI5

ECONOMIC BURDEN OF ANAPHYLAXIS IN THE UNITED STATES

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OBJECTIVES: To estimate the direct medical and indirect costs from anaphylaxis in the U.S. **METHODS:** The study assessed the economic burden of anaphylaxis from a societal perspective, measuring the costs for the year 2006. Costs were estimated using a bottom-up approach—calculating the average cost of illness per patient and multiplying it by reported prevalence estimates. Anaphylactic patients with an emergency department (ED), office based physician, outpatient, and inpatient visits were identified using ICD-9 codes from federally administered databases, i.e. NHAMCS-ED, NAMCS, NHAMCS-OPD, and HCUP-NIS respectively. Direct medical costs for each patient were estimated by either converting final billed charges to cost, or by using Medicare reimbursement values. Direct medical costs also included reimbursement values for ambulance, and epinephrine self-injector devices. Indirect costs were quantified by estimating the lost productivity, in terms of lost earnings due to absenteeism and mortality, of patients or caregiver. These values were based on the earnings estimate from BLS surveys. Prevalence estimates were obtained from published literature. **RESULTS:** The study estimated over 1.1 million patient visits with anaphylactic reactions nationwide. Mean age of the hospitalized patients was 38.9 (± 20.9), with 56.7% females, and half being Caucasian. Total direct costs were estimated to be around \$ 500 million, with the major contribution from inpatient admissions (34%) and ED visits (33.7%). Costs of \$17 million (3.3%) and \$41 million (8.2%) were incurred from ambulance runs and epinephrine self-injector devices respectively. Total indirect costs (\$) were around 320 million, with most of the costs (83%) arising from absenteeism from work due to the reaction. **CONCLUSIONS:** Dealing with anaphylaxis results in an economic burden close to a billion dollar, with the costs in the inpatient and ED setting outweighing the other costs. These numbers are believed to be an underestimation due to irregularities in diagnosis and coding of anaphylaxis.

PRSI6

ECONOMIC BURDEN OF EXACERBATIONS IN CHRONIC OBSTRUCTIVE PULMONARY DISEASEYu A¹, Yang H¹, Wu EQ¹, Dembiski M², Blum S², Setyawan J²¹Analysis Group, Inc., Boston, MA, USA, ²Forest Research Institute, Jersey City, NJ, USA

OBJECTIVES: Exacerbations are believed to be a major cost driver in COPD management. Exacerbations are episodes of acute worsening of COPD symptoms, including cough, sputum production and dyspnea. This study aims to estimate the costs associated with COPD exacerbations for third-party payers in the United States. **METHODS:** COPD patients were identified using the MarketScan database (2004–2008). Inclusion criteria included ≥ 2 COPD diagnoses (ICD-9-CM: 490.xx–492.xx, 494.xx–496.xx), ≥ 12 months of continuous plan enrollment, ≥ 40 years of age, and ≥ 1 exacerbation during the study period. The average available period for follow up was 2.89 years. Exacerbations were identified by the use of oral or parenteral corticosteroids within 7 days of COPD diagnosis. If hospitalization or death occurred, it was classified as a severe exacerbation. The presence of exacerbation-, total-, and COPD-related costs was evaluated at quarterly intervals. Costs were inflation adjusted to 2008. Quarterly cost differences were estimated using generalized estimating equation (GEE) methods, controlling for baseline characteristics. **RESULTS:** A total of 228,978 COPD patients were identified with ≥ 1 exacerbation during the study period, including 66,680 (29%) patients who experienced severe exacerbations. A total of 2,644,174 patient-quarter intervals were available for assessment, of which 446,690 patient-quarters included an exacerbation: severe: 90,210 (20.2%); non-severe: 356,480, (79.8%). Average cost for quarters with exacerbations were \$8726 (severe: \$17,016; non-severe: \$6628) compared to \$4762 for quarters without exacerbations. Adjusting for baseline characteristics, incremental quarterly costs for exacerbations was \$11,261 for severe, \$1509 for non-severe, and \$3439 for any exacerbation over quarters without an exacerbation (all $P < 0.001$). Over half of the total incremental costs were accounted for by COPD-related incremental costs: \$6116 for severe, \$775 for non-severe, and \$1831 for any exacerbation over quarters without an exacerbation (all $P < 0.001$). **CONCLUSIONS:** Exacerbations, especially those that are severe, present a significant economic burden to third-party payers in COPD management.