HEALTH CARE EXPENDITURE AND UTILIZATION FOR PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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OBJECTIVE: This study estimates inpatient, outpatient, and prescription drugs expenditures and health care utilization for patients with Chronic Obstructive Pulmonary Disease (COPD).

METHODS: Inpatient and outpatient claims with primary diagnosis of COPD-defining diseases (ICD-9 codes 491*, 492*, 496*) from 1998–2002 were extracted from Medstat Marketscan database and then matched to prescription drug expenditures using unique identifiers. Regression models controlled for age, gender, employment status, health plan type and other variables. All regression factors mentioned below were significant with \( p < 0.01 \). RESULTS: Average per patient annual expenditures was $7874–$11,412 for inpatient service depending on the type of health plan; $154–$238 for outpatient visits; and $85–$151 for prescription drugs. Results also indicated that gender, age, health care plan type, the region where patient lived and the patient’s industry type all significantly affected health care expenditures and utilization for COPD care. For example, women were less likely to be hospitalized or receive outpatient care, but were more likely to fill COPD-related prescription drugs. Patients in plans requiring a primary care physician referral to receive specialty care (PCP plans) were less likely to be hospitalized, made fewer outpatient visits and filled fewer COPD-related prescriptions. Overall, inpatient expenditures were 1.2% higher for men and 18% lower for patients enrolled in PCP plans. Outpatient expenditures were about 3% higher for men and about 1.7% higher for patients in PCP plans. Prescription medication expenditures were about 2% higher for men and about 19% lower for patients in PCP plans. In all regressions, older patients had higher expenditures. CONCLUSION: There is a substantial economic burden associated with COPD which can potentially be reduced significantly by enrolling patients in PCP plans. Further research is needed to examine why men with COPD use more health care than women and to assess the quality of care provided by PCP plans.

RISK-BENEFIT ASSESSMENT OF TELITHROMYCIN FOR THE TREATMENT OF CAP USING QUALITY-ADJUSTED DAYS (QAD) LOST

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OBJECTIVE: To conduct a benefit-risk assessment comparing telithromycin with other commonly prescribed therapies for the treatment of community-acquired pneumonia (CAP).

METHODS: We developed a model to quantify the benefits and risks of telithromycin versus other common therapies for CAP in terms of quality-adjusted days (QAD) gained. A typical 65-year-old patient was assumed to receive amoxicillin, clarithromycin, or telithromycin for the treatment of acute CAP. Drug efficacy, drug resistance, adverse event (AE) rates and sequelae, and utility decrements associated with CAP and AEs were estimated from published clinical trials and other secondary sources. Benefits of telithromycin versus other therapies were assessed by estimating the gain in QAD due to successful treatment of CAP. Risks were assessed by estimating the QAD lost due to treatment-related AEs (liver toxicity, prolonged QT interval, diarrhea, and blurry vision) and their sequelae. The net benefit of telithromycin was calculated by summing expected benefits and risks over the 21-day period after treatment initiation (including lifetime QAD lost due to death and chronic conditions). We used a second-order Monte Carlo simulation to evaluate the effect of uncertainty in key model parameters on our findings. RESULTS: Patients treated with telithromycin versus amoxicillin are expected to gain 31.01 QAD due to successful treatment of CAP and 0.26 QAD due to AEs. Versus clarithromycin, telithromycin patients lose 0.01 QAD to AEs; however, the net benefit is a gain of 13.09 QAD. Probabilistic sensitivity analyses showed telithromycin to be at least as beneficial as amoxicillin and clarithromycin in 85% and 68% of 10,000 iterations, respectively. CONCLUSIONS: Telithromycin demonstrated a net benefit in terms of QAD gained versus both amoxicillin and clarithromycin despite slightly higher risks due to AEs than clarithromycin. In general, QAD lost due to AEs were negligible compared to the potential benefits from successful treatment of CAP with telithromycin.

PREDICTING EXACERBATION EVENTS IN COPD USING ADMINISTRATIVE DATA

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OBJECTIVES: Cost-effectiveness modeling in COPD is often problematic because the utilization data is usually derived from participants in randomized clinical trials, who may not be very representative of patients treated in the general population. We used the administrative data of a large cohort of COPD patients treated by one managed care system to see whether exacerbation events could be predicted with sufficient accuracy to be used in cost modeling. METHODS: COPD patients under usual care who were continuously enrolled in the Lovelace Health Plan for selected, seasonal 6-month blocks during the study’s observation period (September 1, 2000 to August 31, 2003) were identified using administrative data and a cross-sectional-pooling design (N = 2850). Subsequent exacerbation events, defined as hospital admissions or outpatient encounters with a primary respiratory diagnosis, were captured from the database. Logistic regression models were then developed to identify factors associated with exacerbations. RESULTS: Approximately 46% of the cohort had one or more exacerbations during the observation period. Factors significantly associated with an exacerbation (\( p < 0.05 \)) included age, the number of pulmonary and non-pulmonary outpatient encounters, the total number of prescription fills, having one or more serious comorbidities, ever having an additional diagnosis of asthma, the season of the prior 6 month period as well as having had an exacerbation as well as many two-way interaction terms. The model was able to predict the status of patients with a good degree of accuracy (69% concordant, 30% discordant, 1% tied). CONCLUSIONS: COPD exacerbation events can be reliably predicted from the utilization data commonly found in health system administrative databases. The predicted probabilities from these models can be used to estimate transition probabilities in Markov and similar cost-effectiveness models.