

PRS3

**ACUTE EXACERBATION OF CHRONIC BRONCHITIS (AECB)
TREATMENT EFFECTIVENESS: COMPARISON OF
MACROLIDES TO FLUOROQUINOLONES**

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OBJECTIVES: The purpose of this study is to compare the effectiveness of fluoroquinolones versus macrolides in treating AECB. **METHODS:** The study sample was identified from a large employer claims database covering the period 1999–2002. Patients age 18–65 years with at least one diagnosis of AECB were included in the study sample. The sample was further restricted to AECB patients who had 13 months pre-index date continuous eligibility. The index date was defined as the date of the first prescription of either a macrolide or a fluoroquinolone during the period between 14 days before an AECB diagnosis and 30 days following the diagnosis. The effectiveness, measured by treatment failure rate, of fluoroquinolones and macrolides, were compared using multivariate logistic regression adjusting for gender age, season of the year, additional oxygen therapy, and patient COPD severity as measured by a severity score developed by Wu, et al. Treatment failure rate was defined as occurrence of hospitalization, ER visit, switching of antibiotics, filling of a second prescription of antibiotic, or use of oral corticosteroids within one-month following the index date, and was compared using odds ratio (OR). Patients were categorized into severe COPD (top 25% of severity distribution) and non-severe (moderate/mild) COPD patients. **RESULTS:** When treated with macrolides, severe COPD patients had significantly lower failure rates compared with patients on fluoroquinolones (OR = 2.01, $p = 0.03$). There are no differences in failure rate between macrolides and fluoroquinolones in treating moderate and mild COPD patients. **CONCLUSIONS:** Macrolides are more effective first line therapies compared to fluoroquinolones when treating flare-ups of severe COPD patients.

PRS4

**ESTIMATING THE NUMBER OF CASES OF DIAGNOSED
CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD):
USE OF MEDICAL CLAIMS DATA VERSUS ALTERNATIVE
METHODOLOGIES**

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OBJECTIVES: To estimate the prevalence and annual incidence of diagnosed COPD from medical claims data and to compare results with those derived through alternative methodologies. **METHODS:** Claims data were acquired from a US managed care organization database with records for approximately ten million members in 20 states. The COPD cohort comprised patients aged 25+ years with one or more medical claims with a COPD diagnosis in 2002. For prevalence, patients were required to be eligible for coverage during 2002, while patients in the incidence estimation were required to be eligible for medical coverage in both 2001 and 2002 but without any COPD diagnoses in 2001. Claims-based estimates of prevalence and incidence (overall and by age group) were compared to corresponding published data from other sources. **RESULTS:** We identified 64,141 patients with a diagnosis of COPD (an overall prevalence of 3.7%). Prevalence progressively increased from 0.3% in patients aged 25–34 years to 11.8% in patients aged 75+ years. These estimates are generally lower than other sources. For example, National Health Interview Survey estimates, based on respon-

dent self-reported COPD or recall of being told they have the disease, ranged from 3.9% to 10.6% in the youngest and oldest age groups, and were about 6.0% overall. A total of 7347 newly-diagnosed COPD patients were found, generating an annual incidence rate of 0.95%. Rates increased from 0.08% in patients aged 25–34 years to 2.07% in patients aged 75+ years, somewhat higher than estimates from European studies that used general practitioner case registrations as a data source. No comparable U.S. studies could be identified. **CONCLUSION:** Disparities exist in epidemiological estimates of COPD depending on data, patient populations, and methodologies employed. Further studies are needed to clarify the most valid and reliable data and methods for studying the epidemiology of diagnosed COPD.

PRS5

**EVALUATION OF THE ASSOCIATION BETWEEN SEVERITY OF
CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)
WITH HEALTH-RELATED UTILITY (EQ5DINDEX) AND
HEALTH CARE RESOURCE USE**

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OBJECTIVE: COPD is a progressive and debilitating disease. The purpose of this study was to directly characterize utility and hospital resource use in people with COPD. **METHODS:** Data were abstracted from the Health Outcomes Data Repository (HODaR) describing the treatment patterns and outcomes of 299 subjects with COPD with corresponding lung function measurements. Patients were classified according to the GOLD classification based on their actual to predicted FEV₁ values. Predicted FEV₁ values were estimated from a subjects' height, age and sex. These patients were hospital treated subjects. Total mean number of visits to/from a GP and practice nurse were calculated in the six weeks prior to the survey, along with a measure of utility (EQ5D_{index}). **RESULTS:** Of the 299 subjects, there were 11 (3.7%), 74 (24.7%), 140 (46.8%) and 74 (24.7%) in GOLD classes I to IV, respectively. There was an inverse association between the GOLD classification and mean EQ5D_{index}: 0.52 (0.27), 0.44 (0.34), 0.42 (0.33) and 0.39 (0.31), for GOLD classes I to IV, respectively. Regarding resource use, in the year prior to their most recent FEV₁ measurement was on average 2.1, 2.3, 2.4 and 2.1 hospital admissions for GOLD I to IV, respectively. Additionally, the mean length of stay in the previous year was 11.6, 16.6, 17.7 and 17.3 days, correspondingly. Mean (SD) primary care visits increased from 2.9 (2.5) per person for GOLD-I to 4.6 (7.4) for GOLD-IV, respectively. **CONCLUSIONS:** The EQ5D_{index} estimates showed clearly that this disease results in very poor quality of life, and that this is inversely associated with disease severity. COPD was also extremely resource intensive in all stages of disease severity. The changes in the lungs of patients with COPD are irreversible; however, active chronic disease management strategies may impact on the financial and humanistic cost of this disease.

PRS6

**COMPARISON OF RESOURCE USE AND DIRECT COSTS OF
CHRONIC OBSTRUCTIVE PULMONARY DISEASE WITH AND
WITHOUT COMORBID DEPRESSION IN 2001**

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OBJECTIVES: The objectives of this study were to determine and compare resource utilization and direct costs for adults diagnosed with chronic obstructive pulmonary disease with and

without comorbid depression in the US in 2001. **METHODS:** Retrospective case-control analysis was conducted of the 2001 Medical Expenditure Panel Survey. In 2001, 32,122 persons from the US civilian noninstitutionalized population were surveyed. A total of 1101 patients 18 years or older with chronic obstructive pulmonary disease were identified. Cases and controls were identified using ICD-9 codes. The data contained 153 cases with chronic obstructive pulmonary disease and depression and 948 similar patients without comorbid depression. Cases were matched at a 1:1 ratio to controls based on age, race, gender, and number of comorbidities apart from depression. The matching procedure resulted in 145 pairs. Sample estimates were projected to the population. Expenditure variables represent sums of all annual out-of-pocket expenditures and third party payments. Differences in resource use and expenditures between cases and controls were examined using t-tests. Data were analyzed using SAS Version 8.2. **RESULTS:** Patients with chronic obstructive pulmonary disease and comorbid depression had higher average total health care expenditures (\$10,845 vs. \$6,430; $p = 0.0231$), expenditures for prescription medications (\$2,643 vs. \$1574; $p = 0.0007$), use of office-based visits (15.5 vs. 9.4; $p = 0.0027$), and number of annual prescription medications purchased (45.8 vs. 27.9; $p = 0.0001$) than the control group. Net incremental expenditures associated with comorbid depression were \$7,030,575,677 for total health care and \$1,698,632,604 for prescription medications. **CONCLUSIONS:** Total health care expenditures were 1.7 times higher for patients with chronic obstructive pulmonary disease and comorbid depression than for similar patients without depression matched on age, gender, race, and number of comorbidities. Depression in conjunction with chronic obstructive pulmonary is associated with considerable health care expenditures and utilization of office-based services and prescription medications.

PR57

PHARMACOECONOMIC ANALYSIS OF TIOTROPIUM THERAPY IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASES IN HONG KONG ; A PRELIMINARY REPORT

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OBJECTIVES: The prevalence of chronic obstructive pulmonary disease (COPD) in Hong Kong has been estimated to be 0.35 per 1000 population. The cost of management can therefore translate into an enormous burden on the health care budget. Current pharmacotherapy includes bronchodilators plus anticholinergics. Patient compliance can be a problem due to multiple daily dosing, hence the present study aims to evaluate the potential benefits of tiotropium with once-daily dosage. **METHODS:** The cost of management of COPD was estimated by retrospective review of the history of a cohort of COPD patients admitted to the Prince of Wales Hospital (PWH) in Hong Kong from January 1, 2001 to December 31, 2001. Cost items included hospitalization, procedures, laboratory tests, medications and outpatient clinic visits. The cost-effectiveness (CE) model for COPD developed by Boehringer-Ingelheim was used to assess the CE of COPD therapies. All analysis was based on local cost data, and probabilities of events and efficacy data of tiotropium were adopted from overseas published randomized controlled trials as there is yet no local published data. The study was performed from the perspective of a public hospital. **RESULTS:** Data of 30 patients admitted to the PWH due to COPD were analyzed with the model. Compared to ipratropium, the once-daily dosage of tiotropium showed a decrease in number of exacerbations (0.89 vs. 1.21), a decrease in the management cost due to exacerbations (US\$2550 vs. 4183) and the cost per exacerbation avoided

due to tiotropium was US\$4278. **CONCLUSION:** Based on our preliminary results, tiotropium appears to be a more cost-effective agent in the treatment of COPD when compared to ipratropium.

PR58

COST-EFFECTIVENESS ANALYSIS OF TIOTROPIUM FOR CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD) PATIENTS IN JAPAN

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OBJECTIVE: Chronic obstructive pulmonary disease (COPD) is a major cause of death and disability throughout the world. The objective of this study was to evaluate the health/economics consequence of four treatments (tiotropium, ipratropium, salmeterol and usual care) for patients with COPD in Japan. **METHODS:** In order to estimate the patient's prognosis for one year, we constructed a Markov model based on the model developed by Oosenbrink J et al. in Netherlands. Three Markov stages were set based on the degree of patient's symptoms, e.g., moderate, severe, and very severe. Acute exacerbation was also included in the model. Transition probabilities were derived from several clinical trials. The duration of remaining in the moderate stage was used to define effectiveness. This study was conducted from the payer's perspective and only direct medical costs were considered. Since the time horizon was one year, discounting was not considered. **RESULTS:** The expected costs for tiotropium, ipratropium, salmeterol and usual care were JPY559,314, JPY771,395, JPY612,707 and JPY621,400, respectively (\$1 = JPY103.84). The periods of duration of remaining in the moderate stage (months) were 8.09, 5.56, 6.99 and 6.43, respectively. The numbers of acute exacerbation were 0.80, 1.19, 0.96 and 0.91, respectively. A sensitivity analysis on the probability of home oxygen therapy during maintenance therapy also showed that the tiotropium was the most cost-effective treatment. **CONCLUSION:** In spite of the highest daily drug cost, tiotropium is a cost-saving therapy for treatment of COPD patients in Japan.

PR59

ADHERENCE TO RESPIRATORY MEDICATIONS IN VA PATIENTS WITH CHRONIC LUNG DISEASE

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OBJECTIVES: Most adherence studies have focused on oral medications, with less attention on diseases where non-oral routes of administration are predominant. Our objective was to estimate adherence in VA patients using medications for chronic respiratory disease and examine factors related to adherence. **METHODS:** We identified patients treated at Chicago-area VAs that filled at least two respiratory medications between 08/2002 and 07/2003 (baseline period). We calculated medication possession ratios (MPRs) for each class of respiratory medication between 08/2003 and 07/2004 (study period) that patients filled during the baseline period. Patients were classified as having asthma, COPD, combined asthma and COPD (CAC) or none based on diagnoses at baseline. Average MPR for each medication category was calculated and logistic regression was used to identify factors associated with MPRs of $\geq 75\%$. **RESULTS:** There were 7511 patients included (96.7% male, 35% white). The number of patients by disease were: COPD = 3721 (49.5%); asthma = 1045 (13.9%); CAC = 726 (9.7%) and none = 2019