

## Contributed Poster Presentations

### Poster Session I

#### ASTHMA

##### PAS1

#### HEALTH CARE UTILIZATION, COST AND MEDICATION USE AMONG PEDIATRIC ASTHMA PATIENTS

Modi A, Iyer R, Lawrence L

University of Louisiana at Monroe, Monroe, LA, USA

Asthma is the most prevalent chronic condition in children and is the number one cause of childhood hospitalizations. Revised guidelines published by the National Institutes of Health in 1997 characterize asthma as a chronic, inflammatory disease and propose specific recommendations for therapy with inhaled anti-inflammatory medications and stress the importance of ambulatory care to achieve adequate control. Given the high prevalence and current emphasis on monitoring asthma care by intervention, it is important to evaluate its economic impact on the health care system. **OBJECTIVE:** To estimate costs, health care utilization and characterize medication use of pediatric asthma patients in the post-guidelines era (1999–2001). **METHODS:** Data for this study were derived from the 1999–2001 household component of the Medical Expenditure Panel Survey. Pediatric asthma patients (age  $\leq$  17 yrs) were identified based on ICD-9-CM code of 493. Total costs were computed in terms of direct medical expenditures and indirect costs (based on school days or work days missed by caregiver). All costs were computed in terms of 2003 US dollars. **RESULTS:** Average annual cost per-child for 1999, 2000, and 2001 was \$512.37, \$572.27, and \$662.31 respectively. In 1999, hospitalization was the major cost driver followed by office-based-visits and prescription medications. However, in 2000 and 2001, office-based-visits were the major cost drivers followed by prescription medications. Long-term control medications were prescribed more frequently than quick relief medications. Inhaled anti-inflammatory medications were prescribed less when compared to other medications in the same category. **CONCLUSIONS:** The study data show an increase in the use and cost of office-based-visits, medications and a decrease in hospitalization costs. These findings suggest that there have been improvements in care, consistent with the guidelines. Information from this study can help track changes in treatment of asthma and how the order of cost drivers has changed during this time.

##### PAS2

#### IMPACT OF ANTI-INFLAMMATORY MEDICATION ON ASTHMA COSTS IN A PEDIATRIC POPULATION

Sapra SJ<sup>1</sup>, Martin BC<sup>2</sup>, Dorfman JH<sup>3</sup>

<sup>1</sup>University of California, San Francisco, CA, USA; <sup>2</sup>University of Arkansas for Medical Sciences, Little Rock, AR, USA; <sup>3</sup>University of Georgia, Athens, GA, USA

**OBJECTIVE:** Anti-inflammatory medication may interrupt the progression to and severity of asthma for pediatrics who suffer from allergic rhinitis (AR) and/or atopic dermatitis (AD). The objective of this study was to evaluate the impact of: first

generation anti-histamines (FGAH), second generation anti-histamines (SGAH), and intra-nasal steroids (INS) on annual asthma treatment costs in a cohort of AD/AR patients who develop asthma. **METHODS:** Data from GA Medicaid (1995 to 2001) and MarketScan (commercial population—1998 to 2001) were utilized. Newborn children free of any malignancies and diagnosed with AD/AR who later developed asthma and were eligible for at least 12 months after the first asthma diagnosis were included. All FGAH, SGAH and INS prescriptions from birth until an asthma diagnosis were recorded and total direct health care costs for subjects in the AD/AR cohort after the first asthma diagnosis were examined. Multivariate ordinary least squares regression using Huber-white heteroscedasticity consistent variance-covariance matrix after adjusting for sample selection was used to compare direct medical costs between groups exposed to FGAH, SGAH or INS and groups with no exposure. **RESULTS:** In total, 4277 in GA Medicaid and 353 asthma patients in the commercial were included, of which 2906 (68%) and 228 (64%) patients had at least one prescription for FGAH, SGAH, and INS. Any exposure to these anti-inflammatory agents were associated with a non-significant lower mean total cost of \$66 PMPY (p-value = 0.50) and \$497 PMPY (p-value = 0.45) in the GA Medicaid and commercial populations. Total medical costs (excluding prescriptions) and physician costs were \$733 (p-value = 0.04) and \$303 PMPY (p-value = 0.05) lower for the exposure groups in the commercial population. **CONCLUSION:** Exposure to anti-inflammatory agents reduced medical costs excluding prescription drugs in a commercial population; however, medical costs were not significantly lower in the Medicaid population.

##### PAS3

#### A COMPARISON OF ASTHMA MEDICATION USE IN PUBLICLY VERSUS PRIVATELY INSURED CHILDREN WITH ASTHMA

Ungar WJ<sup>1</sup>, Kozyrskyj A<sup>2</sup>, Paterson M<sup>3</sup>, Mamdani M<sup>3</sup>, Gunraj N<sup>3</sup>, Ahmad F<sup>4</sup>

<sup>1</sup>The Hospital for Sick Children, Toronto, ON, Canada; <sup>2</sup>Manitoba Centre for Health Policy, Winnipeg, MB, Canada; <sup>3</sup>Institute for Clinical Evaluative Sciences, Toronto, ON, Canada; <sup>4</sup>Brogan Inc, Ottawa, ON, Canada

**OBJECTIVES:** Asthma is the most common chronic disease in childhood. To ensure optimal control, children must have access to necessary medications, including inhaled corticosteroids for maintenance and bronchodilators as needed. The objective was to compare asthma medication use in publicly insured social assistance children to privately insured children with asthma. **METHODS:** Identical case definitions were used to create public (n = 12,767) and private (n = 17,046) cohorts of asthmatic Ontario children aged 2–14 years using 2002 aggregate private sector claims and 1998–2001 Ontario Drug Benefits database claims. Use of bronchodilators (BD), inhaled corticosteroids (ICS), leukotriene antagonists (LA) and oral corticosteroids (OS) were compared between cohorts. **RESULTS:** In contravention of guidelines, 12% of social assistance children received BD monotherapy compared to 1% of privately insured

children. Combined therapy of ICS + BD with or without LAs was observed in 70% of privately insured children compared to 44% of social assistance children. Despite apparently better management in the private group, OS use, indicating a severe exacerbation, was 16% in the private compared to 12% in the publicly insured group. While the average annual number of claims were similar in the private and public groups (7.3 vs. 7.1), privately insured children had more ICS claims (3.2 vs. 2.9) and fewer BD claims (2.9 vs. 3.9). **CONCLUSIONS:** Privately insured children appeared to be better managed than social assistance children. Differences in socioeconomic status and formulary listings may explain observed differences. Policies governing public and private drug plans must ensure adequate access to necessary medications for children with asthma.

**PAS4**

**PATTERNS OF PHARMACOTHERAPY UTILIZATION AMONG CHILDREN AND ADOLESCENTS WITH MULTIPLE ASTHMA-RELATED MORBID EVENTS ENROLLED IN A MEDICAID PROGRAM**

D'Souza AO, Smith M, Roy AN

West Virginia University, Morgantown, WV, USA

**OBJECTIVE:** To describe the asthma-related pharmacotherapy utilization following a first and second morbid event for asthma among children and adolescents enrolled in Medicaid. **METHODS:** Medicaid hospitalization and emergency room (ER) claims with a primary ICD-9 CM diagnosis code for asthma dated 2002 were extracted for recipients less than 21 years of age. The corresponding asthma-related prescription claims also were extracted. Recipients with at least two morbid events (defined as two consecutive ER or hospital visits at least 8 days apart) formed the study cohort. Pharmacotherapy use for each recipient was analyzed for up to a 30-day period following his/her first and second morbid event. **RESULTS:** A total of 214 recipients was identified as the study cohort consisting mainly of infants less than 6 years of age (50.0%), males (61.7%), and whites (82.2%). The proportion of recipients who filled a prescription for a controller medication following the second event was greater than the proportion following the first event (40.2% versus 34.1%). A greater proportion of recipients used leukotriene modifiers (24.3%) and inhaled corticosteroids (20.1%) than other controller drug classes following the first event, as well as following the second event (25.7% and 21.0%, respectively). Following the first event, 59.6% of recipients who used a leukotriene modifier continued using the same medication after the second event, compared to only 27.9% of recipients who used inhaled corticosteroids. With respect to demographic groups, there was a very low proportion of recipients who were black who used controller pharmacotherapy following the first (14.7%) and second event (23.5%). **CONCLUSION:** Although there was an increase in the proportion of recipients who utilized controller pharmacotherapy after a second morbid event, there was a low use of these medications overall. Among demographic groups, blacks had the lowest utilization of controller medications following morbid events.

**PAS5**

**DRUG COST ANALYSIS OF TREATMENT FOR ASTHMA OUTPATIENTS IN TAIWAN**

Lu CH<sup>1</sup>, Tarn YH<sup>2</sup>

<sup>1</sup>National Defense Medical Center, Taipei, Taiwan; <sup>2</sup>Taipei City Hospital, Taipei, Taiwan

**OBJECTIVES:** To investigate the trend of treatment costs for asthmatic outpatients in Taiwan from 1998 to 2002. **METHODS:** Claimed database from Bureau of National Health

Insurance of Taiwan's whole population were used to compute the total treatment costs and drug related costs on asthmatic outpatients during the year 1998 to 2002. Claims with ICD-9-CM code of asthma were obtained and then sorted per person to calculate the sum of treatment costs per person per year and the ratio of drug costs per total treatment costs. **RESULTS:** The following present the yearly data from 1998 to 2002: 1) mean drug costs per person per year: NT\$.1286, 1486, 1873, 1940 and 2114; 2) mean of days per person per year: 26, 29, 36, 40 and 43 days; 3) total treatment costs of asthma : NT\$. 4.3 billion, 2.9 billion, 2.4 billion, 2.5 billion and 2.7 billion; and 4) the ratio of drug costs/total costs: 54.92%, 56.48%, 58.15%, 58.52% and 58.84%. **CONCLUSIONS:** Drug therapy for patients with asthma play an important role in asthmatic care. In Taiwan, the study indicated that drug costs per person per year is growing every year. Future research will investigate the appropriateness of these drug therapy and possible drug savings in the future.

**PAS6**

**IMPACT OF ASTHMA KNOWLEDGE ON HEALTH OUTCOMES IN PEDIATRIC PATIENTS**

Suksomboon N, Montakantikul P

Mahidol University, Payathai, Bangkok, Thailand

**OBJECTIVE:** To determine whether asthma knowledge of caregivers could improve health outcomes in pediatric patients. **METHODS:** The study design was a prospective randomized controlled trial in asthma patients aged less than 12 years-old. The study was carried out in asthma clinic at Queen Sirikit National Institute of Child Health, Bangkok, Thailand between August 2002 and March 2003. Eleven active and 11 control patients were invited to attend a clinic. At the clinic the pharmacists conducted interviews and asked all caregivers to answer a questionnaire containing 18 true-false questions regarding asthma knowledge. After completing the questionnaire, pharmacists provided knowledge of asthma regarding treatment and environmental care to caregivers in the intervention group. During the study period, patients in both groups continued to receive the usual care from their physicians. Patients and caregivers were followed up during the next six months and the same process was repeated. The outcome measure was the rate of hospitalization in asthma patient between groups. **RESULTS:** At baseline there are no significant differences in asthma knowledge between intervention and control group. At the end of study, the intervention group is generally better at answering the asthma questions correctly. The number of hospitalization in the intervention group decreases from 31 to 13 ( $p < 0.05$ ), whereas there is no statistically significant difference in the control group. **CONCLUSIONS:** The present work suggests that pharmacist's involvement in asthma clinic has increased caregivers' knowledge leading to a decrease in the number of hospitalization. However, further training is required for caregivers to optimize their role in helping asthma patients. Further work could be carried out to determine whether the results of this study are reflective of the knowledge in adult patients.

**PAS7**

**DIRECT AND INDIRECT COST OF ASTHMA IN AN EMPLOYER POPULATION**

Atherly A, Nurmagambetov T, Williams S

Centers for Disease Control and Prevention, Atlanta, GA, USA

**OBJECTIVES:** The purpose of this abstract is to examine the direct and indirect costs associated with asthma in an employer population. This work improves on previous studies of employer populations with asthma by incorporating measures of the indi-