PARENTS OF ASTHMATIC CHILDREN WERE ACCURATE REPORTERS OF URGENT HEALTH SERVICES USE—A RETROSPECTIVE ANALYSIS OF HEALTH SERVICE USE AND ADMINISTRATIVE DATA REVEAL CLINICALLY IMPORTANT PATIENT PROFILES IN CHRONIC ASTHMA

OBJECTIVES: While parents are frequently relied upon to report their children’s health services use for epidemiological and health economic evaluations, the accuracy of parental proxy reports remains unknown. The objective was to assess agreement between parents’ proxy reports of children’s respiratory-related health service use and administrative data in a sample of pediatric asthma patients. METHODS: A retrospective analysis of statistical agreement between clinical and claims data for reports of outpatient physician visits, Emergency Department (ED) visits and hospitalizations was conducted for 543 asthmatic children recruited from urban and suburban clinics and ED sites in the Greater Toronto area. Health services use data were extracted from the Ontario Health Insurance Plan and Canadian Institute for Health Information administrative databases for each child for the interval coinciding with the proxy report for each type of health service. RESULTS: Agreement between administrative data and respondent reports was substantial for inpatient admissions (κ = 0.80, 95% CI 0.74, 0.86) in the past year, moderate for ED visits (κ = 0.60, 95% CI 0.53, 0.67) in the past year and poor for outpatient physician visits (κ = 0.13, 95% CI 0.00, 0.27) in the past 6 months. Income, parent’s education and child quality of life symptom scores did not affect agreement. Agreement for ED visits was significantly higher (p < 0.05) for children that had an asthma attack in the past 6 months (κ = 0.61, 95% CI 0.54, 0.68) compared to children that did not (κ = 0.25, 95% CI 0.00, 0.59). CONCLUSION: Parents of asthmatic children are good proxy reporters of their child’s respiratory-related health services utilization for ED visits and inpatient admissions. Parent proxy reports of urgent care, important markers of asthma morbidity, can be used reliably in epidemiological and health economic studies.

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ALLERGY/ASTHMA—Methods & Concepts

DATA EXTRACTION METHODS, ECONOMETRIC MODELING AND FACTORIAL ANALYSIS REVEAL CLINICALLY IMPORTANT PATIENT PROFILES IN CHRONIC ASTHMA

OBJECTIVES: To evaluate the clinical factors contributing to the severity of chronic asthma. METHODS: A total of 1860 patients with chronic pulmonary disease were invited to the study and comprehensive 10yr medical history was collected for every participant from their health care providers. Data included all recorded symptoms, signs, adverse drug effects, diagnostic test results, treatments, and procedures. The data were converted into electronic format and advanced text-information extraction methods were used to measure contact-by-contact all cost related to the respective costs. Individual-periodic variation in the cost of care was modeled by econometric methods. A multidimensional correspondence analysis (MCA) was used to distinguish meaningful patient clusters within the cost context. RESULTS: Of 230,000 health care contacts analyzed, approximately 35% were identified as asthma-related. The average cost of annual asthma care excluding medication and indirect costs was 520€. Hospitalizations and urgent visits explained a significant part of the high expenses. Two distinct patient cohorts were identified with the MCA, an elderly cohort with significant co-morbidities and a younger with preponderance toward infectious and allergic symptoms and findings. These altogether 16% of patients explained 81% of the total costs of care for asthma in our study. CONCLUSION: This real world data on health care utilization can be used to identify different patient profiles, a prerequisite for individualized health care interventions.

THE EVOLUTION OF ASTHMA GUIDELINES FOR CHILDREN

OBJECTIVES: To depict the evolution of pediatric guidelines for asthma and to compare the current guidelines internationally in terms of their organization, presentation of evidence, and special consideration for children, especially with respect to the definitions of asthma control and severity. METHODS: A systematic search to identify asthma guidelines was conducted. All of the guidelines were organized in chronological order by country and searched for the terms “pediatric,” “child,” or “age.” Any considerations specific to pediatric asthma incorporated into the recommendations were summarized. The concepts of asthma control and severity were reviewed in the literature and their definitions were compared across the most current guidelines. RESULTS: The most prominent pediatric asthma guidelines that have been put forward were by the Global Initiative for Asthma (GINA), Canada, and Japan. United States, Britain, and Australia have adopted additional chapters for children or updated their guidelines to reflect literature specific to children. Current guidelines consistently address pediatric aspects of the asthma diagnosis, prevention, pharmacotherapy, inhalation devices, and management for acute exacerbations. However, none of the guidelines deal with the challenges of assessing asthma control or severity in children. The parameters used to measure asthma control and severity are not consistent across the guidelines and their relevance in children has not been clearly established. CONCLUSION: There has been significant progress away from consensus opinion towards evidence-based guidelines for asthma. Pediatric considerations in the management of asthma have been integrated into guidelines in different countries to different degrees and through varied strategies. It will be important for future guidelines to clearly present the diverse challenges associated with pediatric asthma management in a way that identifies not only the differences from adults but also the level of supporting evidence, in order to encourage pediatric asthma research and improve the management of asthma in children.

IMPACT OF ADHERENCE TO INHALED CORTICOSTEROID ON HEALTH CARE UTILIZATION

OBJECTIVES: To evaluate the impact of adherence to inhaled corticosteroids (ICS) on health care utilization in patients with
Abstracts

**METHODS:** IHCIS managed care benchmark database representing over 40 million US commercial lives was analyzed. The first prescription claim for an ICS in 2005 was identified (index date) and patients who were continuously eligible for medical and pharmacy services for 12 month before and after the index date were included. Patients were selected based on the following criteria using the 12 month pre-index date: 1) asthma-related ER use or hospitalization >= 1, 2) asthma-related MD visits >= 4, or 3) asthma-related medication fills >= 4 and diagnosis of asthma >= 1. Adherence was measured using both medication possession ratio—MPR (adherence) and having at least one ICS claim for each of the four post-index quarters (persistence). Health care utilization including ER visits and hospitalizations during the post 12 month period was compared between the adherent and non-adherent groups. Poisson regression was utilized to evaluate the impact of adherence with ICS on utilization controlling for potential confounding factors. **RESULTS:** A total of 18,420 patients 55.8% female with an average age of 31.68 met the criteria for final analyses. Mean MPR was 0.43 and 12.7% of the study population had MPR >= 0.8 (adherent). 44.7% of patients filled at least one ICS prescription for four consecutive quarters (persistent). Compared to non-adherent patients, adherent patients had significantly less incidence of hospitalization or ER visit (IRR, 0.58; 95% CI, 0.37–0.89). Similarly, persistence with ICS prescription filling behavior was associated with a significantly lower incidence of hospitalization or ER visit (IRR, 0.74; 95% CI, 0.62–0.87). **CONCLUSION:** Adherence with ICS was suboptimal in selected patients with asthma. Regardless of metric used, patients identified as adherent were less likely to have an asthma-related hospitalization or ER visit.

**IS CURE WORSE THAN THE DISEASE?**

**PAA21**

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**OBJECTIVES:** Instrumental variable approach gained popularity in outcomes research because even in the presence of unmeasured confounding, such methods may consistently estimate the average causal effects. However, for this consistent estimation to be achieved several conditions must hold. Recent outcomes research literature seems to ignore these conditions and the results may provide inconsistent estimates. In this paper, we will overview instrumental variable approach, as well as possible tests to check the pre-requisite conditions and show how weak instruments may produce inconsistent and inefficient results.

**METHODS:** Recently proposed Swanson and Chao tests used to check for weak instruments. For the cases with single endogenous variables conditional likelihood ratio is implemented and used. For the cases with more than one endogenous regressor Anderson Rubin test is reviewed. Relevant level curve presented for two endogeneous variables. **RESULTS:** The Market Scan private insurance data base was used in this study which based upon analytic sample of 36,341 asthma individuals whose health care was provided under a variety of fee-for-service (FFS), fully capitated and partially capitated health plans, including exclusive provider organizations, indemnity plans. We showed how to test weak instruments under the assumption that we have single endogenous variables. We showed that one of the instrument was weakened and the results produced inconsistent and inefficient estimates of the effect of treatment. With the correct instruments, the estimates were statistically significant (p = 0.001). **CONCLUSION:** Despite the obvious benefit of instrumental variable models, the method should not be used blindly. Several strong conditions required for these models to work, and each of them should be tested. Otherwise the results would be statistically worse than the results that can be achieved using simple ordinary least squares.

**CAN PATIENTS WITH ASTHMA FEEL THEIR MAINTENANCE INHALER WORKING RIGHT AWAY? REPRODUCIBILITY AND VALIDITY OF A WEEKLY DIARY FOR ASSESSING PERCEPTION AND SATISFACTION**

**PAA22**

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**OBJECTIVES:** The ability of asthma patients to feel their maintenance inhaler work right away and their satisfaction with this perception could serve as positive reinforcement of daily inhaler therapy, leading to higher levels of persistence and improved health status. This study examined the reliability and validity of a 5-item weekly diary, the “Onset of Effect Questionnaire” (OEQ), for describing patient perceptions associated with feeling a maintenance therapy working right away as an initial step in understanding this phenomenon. **METHODS:** Secondary analyses of data from 360 patients (aged >18 yrs) with mild to moderate asthma gathered during a Phase III, 12-week, randomized, double-blind, double-dummy, placebo-controlled clinical trial (SD-039-0716) comparing budesonide/formoterol pMDI with its monoproduts. OEQ items were analyzed using dichotomous scaling; the items identifying patients who perceived their medication working right away (perception) and patients satisfied with this perception (satisfaction) at Week 1 were pre-specified as primary outcomes. Statistical tests of reproducibility and validity were based on a comprehensive, a priori analysis plan. **RESULTS:** One-week reproducibility: perception: phi = 0.77; satisfaction: 0.70 (p < 0.0001). Construct validity: both perceiving and satisfied patients exhibited a higher increase in FEV1 15 minutes post-baseline than those who were not (p < 0.0001). Those perceiving and satisfied patients also reported higher symptom severity scores (Asthma Quality of Life Questionnaire) than those who were not (p < 0.05; p < 0.01), with no difference in rescue medication use. Predictive: Patients perceiving and those satisfied at Week 1 had higher 15 minute post-dose FEV1 (p < 0.0001) and greater satisfaction with medication (Overall Perception of Medication subscale of the Patient Satisfaction with Asthma Medication (PSAM) questionnaire) and asthma relief (PSAM Relief subscale) at the end of Week 2 than patients who did not (p < 0.0001). **CONCLUSION:** The weekly diary approach is a reliable and valid method for identifying patients who perceive their medication working right away and those satisfied with this perception.

**UNDERSTANDING PATIENT PERCEPTION OF THERAPY: DEVELOPMENT OF A WEEKLY DIARY TO DETERMINE WHETHER PATIENTS WITH ASTHMA CAN FEEL THEIR MAINTENANCE INHALER WORKING RIGHT AWAY**

**PAA23**

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**OBJECTIVES:** The influence of positive reinforcement on behavior is well documented, beginning with the original work by B.F. Skinner to more recent evidence showing its value in improving treatment adherence. An important challenge in the asthma population is persistence with daily maintenance therapy. Immedi-