442 Alignment With The Revised NHLBI 2007 Asthma Guidelines, Expert Panel Report 3 (EPR 3) In A Large Payer Database

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RATIONALE: The newly revised asthma treatment guidelines recommend increased intensity of therapy steps when asthma is uncontrolled. We studied alignment with the revised guidelines using a HIPPA compliant claims database.

METHODS: Uncontrolled asthma (UA) was defined as either ≥seven short-acting beta-agonist prescriptions (impairment) or ≥two separate exacerbation events (risk) over a twelve month period. Exacerbation was defined as an emergency (ED)/hospitalization/ 'outpatient exacerbation' (OE) identified as oral corticosteroid prescription (OCS) associated with a physician visit for asthma. The last uncontrolled event was defined as the index. Continuous enrollment for twelve months pre-post index was required. Patients were classified into asthma therapy steps based on observed treatment pre-index. Post-index outcomes included percentage of patients stepped up consistently as per the revised guidelines, % receiving specialist care. Factors predictive of step-up in care were explored in a multivariate regression analysis.

RESULTS: Of the 18,343 UA patients identified 60% had evidence of risk, 40% evidence of impairment. Pre-index care was classified as: 5% no treatment; 15% unclassified and 39% step1, 13% step2, 12% step3, 20% step4, 9% step5, 0.6% step6. For UA in Step1 - Step5, 27% of patients had any step up in care and 34% saw a specialist in the 12 months post-index. For these stepped-up patients, pre-index factors such as 2 OEs, 1°CS +1ED and pulmonologist care were associated with higher odds of being stepped up (OR = 1.45, 1.66 and 1.33, $p < 0.05$) post-index.

CONCLUSIONS: Significant differences were observed between existing treatment patterns during study years (2004-2007) and the recommendations set forth by the newly revised guidelines.

443 Valved-Holding Chamber Technique in Housestaff Residents: Knowledge-Base versus Skills-Set

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RATIONALE: Patients may require specific education to understand that metered-dose inhalers (MDI) used with valved-holding chambers (VHC) can be equally (or more) effective as nebulizers at delivering inhaled medication. We assessed housestaff's knowledge and ability to demonstrate stepwise MDI/VHC technique.

METHODS: A brief survey assessed 38 pediatric and family medicine housestaff's knowledge of benefits of MDI/VHC use and steps in proper technique. Utilizing a 9-point skills-assessment-score, an allergist then rated housestaff's skills in demonstrating MDI/VHC use (including using a mask attachment for young children). Following assessment and critique, the allergist re-demonstrated proper technique through structured, individualized training.

RESULTS: Housestaff with previous training scored higher on skills-assessment than their counterparts without previous training ($p = 0.017$). Four skills-assessment elements directly related to elements of knowledge-assessment: 1) Of the sample of 38 only 16 (42%) knew about the *slow, deep breath required for proper inspiration;* of these 16, 11 (69%) failed to correctly demonstrate this step; 2) 37 housestaff (97%) knew about the need for *holding breath for 10 seconds after the first puff* but of these 37, 25 (68%) failed to demonstrate this; 3) Only 18 housestaff (47%) knew about needing to *wait 30-60 seconds between two puffs* while 9 of the 18 (50%) failed to demonstrate this; 4) Only 21 (55%) knew about the effectiveness of MDI/VHC with young children but of these, 17 (81%) failed to demonstrate *the necessary modifications in technique.*

CONCLUSIONS: Residency training programs should consider including formal, structured, individualized instruction to develop necessary educational, outreach, and communication skills in housestaff.

444 An Internet Accessible Extract Lab Management System (ELMS) Increases Efficiency and Minimizes Prescription Ordering Discrepancies in a Centralized Allergen Extract Mixing Laboratory

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RATIONALE: The United States Army Centralized Allergen Extract Laboratory (USACAEL) formulates allergen extract prescriptions for over 350 facilities worldwide. Rigorous quality control initiatives include the review of prescription contents, demographic data and treatment information for close to 20,000 prescriptions received annually. In 2006, a new internet accessible Extract Lab Management System (ELMS) facilitated the ordering and processing of prescription requests.

METHODS: From January 2005 to December 2007, USACAEL identified and recorded the major types of prescription writing errors observed from 55,449 patient prescriptions. An analysis was performed comparing the number and type of prescription writing errors and subsequent verification calls documented in 2005, to those recorded in 2006-2007, after the implementation of ELMS.

RESULTS: In 2005, 898 prescription writing errors were recorded from handwritten prescription requests received by mail or fax. Five major error categories were revealed through pareto analysis: incomplete patient demographics (29%), wrong patient record (24%), incomplete patient treatment information (23%), wrong antigen content (14%) and incomplete fax information (10%). In 2007, 94% of prescriptions were ordered electronically through ELMS with 347 errors documented. Since the implementaion of ELMS in 2006, a 61% decrease in documented errors was demonstrated. Vaccine content errors decreased by 90% and those related to incomplete treatment information by 64%.

CONCLUSIONS: Commitment to providing quality assured allergen extract vaccines warrants considerable personnel time and effort. The implementation of an internet accessible ordering system has enhanced quality improvement initiatives by reducing prescription writing errors, decreasing time and resources spent in the error clarification process and allowing for increased productivity.

445 Severe Asthma in School Children-Impact on Quality of Life and Correlations to Objective Markers.

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RATIONALE: The aim of the study was to investigate if and how the quality of life (QoL) is influenced by asthma severity and bronchial inflammation measured with objective markers in school children.

METHODS: We studied 45 patients with *severe asthma* having recurrent symptoms, treated with ≥800 microgram inhaled Budesonide or equivalent and 20 matched children having *mild/moderate asthma* with symptom control by 100-400 microgram Budesonide or equivalent. The age rang was 6 to 18 years (mean = 13,7yy. female = 22), all skin prick tested (SPT) and 40 showed sensitization to aeroallergens by one or more allergens ≥3 mm positive SPT. Paediatric Asthma Quality of Life Questionnaire (PAQLQ(S)) and Asthma Control Test (ACT) were used to evaluate self reported QoL and asthma control. Exhaled nitric oxide (FENO); total number of blood Eosinophils; forced expiratory volume in one second (FEV1); and bronchial hyper-responsiveness (BHR) using methacholine challenge were measured. Non parametric tests were applied to evaluate differences between groups and correlations (SPSS 16.0 software).

RESULTS: Children with severe asthma had poorer self reported quality of life and asthma control than mild/moderate asthmatics (p = <0,001). There were significant correlations between PAQLQ(S) and ACT (r = 0,701**p = 0,01), FENO (r = -0,260*p = 0,05) and FEV1 (r = 0,265*p = 0,05). PAQLQ(S) also correlated with blood eosinophils (r = -0,396*p = 0,05) but only in allergic sensitised children. BHR showed no correlation to PAQLQ(S).

CONCLUSIONS: In asthmatic children, there seems to be a relationship between self-reported QoL and the severity of bronchial inflammation and asthma. This supports the usefulness of combining subjective and objective measures in paediatric asthma management.

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