family history of atopy and they do recommend allergy evaluation via testing; these were similar between all groups. When comparisons were made between the groups, these areas showed statistically significant differences:

1) Practitioners who see more patients with EoE more frequently were more likely to perform testing for immediate hypersensitivities to aeroallergens and foods.
2) Practitioners who participate more often in workshops were less likely to perform patch testing for foods.

Conclusions: Our survey reveals that allergy practitioners worldwide are following patients with EoE. Practitioners who see more patients with EoE more frequently are more likely to perform allergy testing in form of hypersensitivity testing to both aeroallergens and foods. This could be secondary to participation in educational sessions or more interest in searching the literature. Participation in workshops has an inverse relation to performing patch testing for foods, which may show that current education does not support this practice. In order to have a more uniform approach to patients with EoE, a consensus guideline is prudent.

404 Allergen Specific Immunotherapy as a Treatment for Eosinophilic Esophagitis
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Background: Eosinophilic Esophagitis (EoE) is an inflammatory disease that reduces the ability of the esophagus to pass food, often leading to dysphagia. A relationship between EoE and food allergies has been determined. However, there have been several documented cases in which patients had negative prick skin testing (PST) results for food allergens and positive results for airborne environmental allergens, and still have a confirmed diagnosis of EoE. Recently, airborne allergens have been implicated in the onset of this condition. Studies have shown that patients sensitive to airborne allergens such as pollen have a seasonal biannual component in which the severity of EoE symptoms increase, coinciding with high pollen seasons.

Methods: We followed a 65-year-old man with a history of allergies complaining of an increase in his symptoms of allergic rhinitis and asthma. He also noted dysphagia and occasional vomiting. We noted the disease and medication course over 5 years of treatment.

Results: The patient underwent an esophagastroduodenoscopy with biopsy, in which midesophageal rings as well as an 8 mm sessile polyp were found, suggesting EoE. Histological analysis confirmed EoE, having found >20 intraepithelial eosinophils/HPF. The patient was treated with a short term prednisone regimen, as well as maintenance medications consisting of inhibited corticosteroids and antihistamines. The patient returned 6 months after the initial consultation and still presented symptoms of EoE, at which point the patient was prescribed proton pump inhibitors. In addition, allergen specific immunotherapy was initiated for confirmed airborne allergens. The patient was examined after 5 years of immunotherapy treatment. Not only did he report that his allergic rhinitis and asthma symptoms were controlled, but his EoE symptoms had resolved.

Conclusions: Results suggest that immunotherapy for airborne allergens could be a successful treatment for EoE. A larger study is needed to determine if allergen specific immunotherapy is a viable treatment option for EoE in similar cases. Such a study could include patients with EoE and confirmed airborne allergens treated with immunotherapy while monitoring a number of eosinophilic and lymphocytic markers.

EPIEMIOLOGY OF ALLERGIC RHINITIS

405 Treatment of Nasal Allergies: Results from the Allergies Surveys in America, Asia Pacific, Latin America, and Middle East
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Background: The Allergies surveys have been conducted in several regions of the world, and provide a uniquely comprehensive insight into the prevalence and impact of nasal allergies worldwide. Here we report specifically on treatment of nasal allergies in the Allergies in America (AIA), Asia Pacific (APIAP), Latin America (AILA) and Middle East (AME) surveys.

Methods: Patients who were previously diagnosed by a health care professional with nasal allergies (hay fever, allergic rhinitis or nasal allergies, plus sinus disease in AIAP), exhibited symptoms, and/or had received treatment, were included. Standardized questionnaires provided by Abt SRBI were used; individual questions and methodology varied slightly between regions. In total, around 90,000 households were screened, including responses from 6,081 patients.

Results: The surveys revealed that among patients receiving treatment for nasal allergies, the proportion using a prescription nasal spray varied regionally, from 21% in AIAP to 54% in AIME. Despite a high percentage of patients reporting satisfaction with their prescription nasal spray, many patients who were dissatisfied cited reasons such as lack of effectiveness and lack of 24-hour relief as primary concerns. The percentage of allergy sufferers who experienced a loss of product effectiveness over 24 hours varied regionally from 35% in AILA to 53% in AIAP. Many patients strongly agreed there were no truly effective treatments for nasal allergies, and 10% of all patients in AIA chose to change their medication several times a year. The most commonly reported side effects of prescription medications were dripping down the throat and dryness. Bad taste was also commonly reported, in all regions except North America, where drowsiness was the third most commonly reported side effect. A higher proportion of patients reported side effects with prescription sprays in the Middle East than in any other region surveyed.

Conclusions: There is still an unmet need in treatment of patients with nasal allergies worldwide. A low percentage receives treatment with prescription nasal sprays, despite this form of therapy being considered the ‘gold standard’ of treatments. Patients are bothered by a range of side effects generally different to those reported in drug information leaflets.

406 Comorbid Allergy-related Respiratory Conditions Among Children and Adults DIAGNOSED WITH ALLERGIC RHINITIS: FINDINGS FROM RESEARCH JOINTLY FUNDED BY THE AAAAI AND ACAAI
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Background: We examined rates of comorbid allergy-related respiratory conditions among patients diagnosed with allergic rhinitis (AR) to characterize AR-related disease burden.

Methods: Florida Medicaid retrospective claims data (1997–2009) were analyzed to compare the likelihood of receiving targeted comorbid allergy-related respiratory conditions among AR-diagnosed (ICD-9 477.x) children (age <18 years) and adults (age ≥18 years). Targeted comorbidities included strep throat (ICD-9 034.x), conjunctivitis (372.x), otitis media (381.x-382.x), acute respiratory infections (460.x-466.x), other diseases of the upper respiratory tract (470.x-476.x and 478.x), pneumonia/influenza (480.x-488.x), chronic obstructive pulmonary disease/allied conditions (490-496), asthma (ICD-9 493.x), and atopic dermatitis (691.8).

Results: Overall rates of AR were significantly higher for children than adults (8% vs 3%, P < 0.0001). On average, AR-diagnosed patients had significantly more comorbid allergy-related respiratory conditions than nonAR-diagnosed patients (children, 3.7 ± 1.9 vs 1.2 ± 1.7 P < 0.0001; adults, 2.6 ± 1.7 vs 0.5 ± 1.0, P < 0.0001). Compared to nonAR-diagnosed
patients, the likelihood of receiving the following diagnoses among AR-diagnosed children and adults, respectively, were: 13 and 15 times greater for acute respiratory infection; 6 and 9 times greater for otitis media; 6 and 8 times greater for asthma; 6 and 12 times greater for upper respiratory infection; 5 and 8 times greater for conjunctivitis; 5 times greater (both children and adults) for chronic obstructive pulmonary disease/allied conditions; 5 and 8 times greater for strep throat; 4 and 3 times greater for pneumonia/influenza; and 4 and 9 times greater for atopic dermatitis. Differences between AR versus nonAR-diagnosed groups and between children and adults were significant at the \( P < 0.001 \) level.

**Conclusions:** Compared to their counterparts who were not diagnosed with AR, children and adults with AR had a significantly greater likelihood for receiving any targeted comorbid allergy-related respiratory condition. Likelihood estimates, which were 3 to 15 times greater for AR-diagnosed patients, varied significantly for children and adults by specific comorbid condition. Given a diagnosis of AR, the likelihood for comorbid respiratory infection, asthma, otitis media, conjunctivitis, atopic dermatitis and strep throat was substantially greater for adults; the likelihood for pneumonia/influenza was greatest for children; and the likelihood for chronic obstructive pulmonary disease/allied condition was roughly equivalent for the 2 age groups.

### 407
**Survey of Rhinitis Phenotypes**
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**Background:** Non-infectious rhinitis (NIR) is often considered a trivial disease, easily controlled by currently available drugs. Recently however, adequate attention of the scientific and regulatory environment has been called on the unmet needs of the most Severe Chronic Upper airways Diseases (SCUADs, Bousquet J et al, J Allergy Clin Immunol 2009;124:428–33). Object: An independent observational cross-sectional survey was promoted by the Italian Federation of Allergy and Clinical Immunology Societies (IFIAIC) in order to identify phenotypes of NIR and the dimension, clinical features and burden of SCUADs in Italy.

**Methods:** All IFIAIC clinical centers answering GPC standards were invited to collect data through a common questionnaire from up to 50 consecutive cases of NIR observed from January 1 to June 30, 2011 in subjects aged over 14 years. Data management, entry and analysis were performed through a validated procedure by IBIS, Milan, in respect of privacy requirements.

**Results:** The duration of rhinitis was 6.8 ± 6.7 years in the 2279 patients studied. Rhinitis was classified as moderate/severe in 42.9% of the 511 patients with intermittent rhinitis and in 69.5% of the 1959 patients with persistent rhinitis. 81.6% of NIR had one or more positive skin tests, grass (37.2%), Dermatophagoides pteronyssinus (26.8%) and Parietaria (19.8%) being the allergens more frequently responsible for a clinically relevant sensitization. Conjunctivitis (47.3%), asthma (34.4%), sinusitis (15.5%), sleep disturbances (9.4%) and nasal polypos (6.0%) were the co-morbidities more frequently associated with rhinitis, particularly in the most severe forms. The underlying treatment (anti-histamines in 64.4%, nasal steroids in 59.7%, antibiotic in 14.8% and oral steroids (1) in 8.1% of cases), was considered unsatisfactory in 19.1% of cases by the doctor and in 33.6% by the patients. Immunotherapy was indicated in 63.9% of subjects with a clinically relevant sensitization but it was accepted only by 51.6% of the patients, the high costs being the major cause for non-acceptance.

**Conclusions:** NIR is a heterogeneous entity including several different phenotypes. Allergic rhinitis patients with persistent symptoms, co-morbidities, poor response to pharmacological treatment represent a not frequent phenotype but with high social and individual costs and still unanswered health needs.

### 408
**Prevalence and Risk Factors Associated to Symptoms of Rhinoconjunctivitis in Mexican School Children. A Multicenter Study**
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**Background:** According to ISAAC symptoms of allergic rhinoconjunctivitis (RC), have a worldwide prevalence of 8.5% in school children. Multiple risk factors had been associated with its prevalence, though little is known about the regional variations of these risk factors.

**Objective:** Identify the prevalence and the main risk factors associated to the presence of symptoms of rhinoconjunctivitis in the last 12 months in Mexican school children.

**Methods:** Cross-sectional, multicenter, prospective, based in ISAAC methodology of 9 registered sites in 8 cities (north, center and south of the Mexican Republic) with a validated and standardized survey applied to tutors of children aged 6 to 7 years old. Risk analysis was made through multivariate logistical regression, central tendency and dispersion measures were obtained with respective 95% confidence intervals.

**Results:** 24,902 surveys were obtained. The prevalence and 95%CI of symptoms of rhinitis was as follows: Monterrey 23% (21.4-24.5%), Mexicali 28.7% (26.9-30.5%), Ciudad Victoria 21.3% (19.7-22.8%), Villahermosa 39% (37-41%), North Federal District 45.6% (44.1-47.2%), Toluca 18.6% (17.3-20%), Tijuana 24.5% (22.9-26.1%), southeast Federal District 53% (50.7-55.4%) Veracruz 25% (23.1-26.8%) and conjunctivitis: Monterrey 8.8% (7.8-9.9%), Mexicali 13.2% (11.9-14.5%), Ciudad Victoria 7.3% (6.3-8.3%), Villahermosa 18.7% (17.20%), North Federal District 20.4% (19.1-21.7%), Toluca 7.3% (6.4-8.2%), Tijuana 8.7% (7.6-9.7%), southeast Federal District 25.1% (23-27.1%) Veracruz 8.7% (7.5-9.9%). The prevalence of rhinoconjunctivitis were 12.8%. Identified risk factors for the presence of rhinitis in the last 12 months were: asthma symptoms in the last 12 months OR 2.59 (95% CI, 2.25-2.98; P ≤ 0.0001), wheezing ever OR 1.78 (95% CI, 1.61-1.96; P ≤ 0.0001), eczema symptoms in the last 12 months OR 1.61 (95% CI, 1.35-1.93; P ≤ 0.0001), atopic dermatitis ever OR 2.97 (95% CI, 2.52-3.51; P ≤ 0.0001). Identified risk factors for the presence of conjunctivitis in the last 12 months were: wheezing ever OR 1.88 (95% CI, 1.64-2.16; P ≤ 0.0001), asthma symptoms in the last 12 months OR 2.97 (95% CI, 2.52-3.51; P ≤ 0.0001) eczema symptoms in the last 12 months OR 1.95 (95% CI, 1.58-2.41; P ≤ 0.0001), atopic dermatitis ever OR 2.14 (95% CI, 1.81-2.54; P ≤ 0.0001).

**Conclusions:** The highest prevalence of rhinoconjunctivitis in Mexican School Children is in the southeast of the Federal District. The presence of asthma symptoms in the last 12 months, wheezing ever, eczema symptoms in the last 12 months, atopic dermatitis ever, risk factors are present symptoms of rhinoconjunctivitis.

### 409
**Oral Allergy Syndrome and United Airways Disease: Is There a Functional Connection?**
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