# Eastern Allergy Conference
# May 30 - June 2, 2024 ~ Palm Beach, FL

Scientific Posters S1-S42 will be on display in the Ponce Foyer during the coffee break, 10:00 – 10:45 am, Saturday June 1, 2024

Not for CME Credit

**S3**

**Real-world Impact of Treated Hereditary Angioedema Attacks on Patients' Employment and Work Productivity**

Timothy Craig DO, Paula Busse MD, Sandra Christiansen MD, Maeve O'Connor MD, Cristine Radojicic MD, Julie Ulloa, Sherry Danese, Tomas Andriotti MD, Paul Audhya MD, Vibha Desai PhD

**Introduction:** Hereditary angioedema (HAE) is a rare genetic disease associated with unpredictable attacks of tissue swelling. We examined the impact of the patients' last treated attack on their ability to work and whether this was diminished among those having attacks while receiving long-term prophylaxis (LTP).

**Methods:** Patients with type I/II HAE completed an online survey. Participants ≥12yrs old treated ≥1 HAE attack with an on-demand (OD) therapy in the prior 3 months. The Work Productivity and Activity Impairment Questionnaire: General Health assessed the impact of the last treated attack on participants' ability to work during 7 days following attack onset.

**Results:** Respondents included 80 adults and 14 adolescents, of which 42 patients self-reported as employed at the time of their last treated attack. Of those, 24 (57%) managed HAE with OD only, while 18 (43%) were receiving LTP. Sixty-seven (72%) rated their attack severity as moderate to very severe (72% OD; 71% LTP). Median (interquartile range) time from attack recognition to OD treatment was 2hrs (1-4hrs). Twenty (48%) patients were moderately to completely unable to do their job due to their last attack (46% OD; 50% LTP). Average impairment for overall ability to work was 39% (36% OD; 43% LTP), and the average absenteeism was 15% (13% OD; 17% LTP). Forty patients worked ≥1hr in the 7 days following the attack. Of those, 14 patients (35%) indicated that their last treated attack modestly to severely impacted their productivity (35% OD; 41% LTP); mean impairment (presenteeism) at work was 35% (33% OD; 37% LTP).

**Conclusions:** Despite treatment with OD therapy, HAE attacks impacted the work lives of employed patients resulting in impairments in their ability to work, substantial absenteeism, reduced productivity, and presenteeism among those who were able to work. The impact was similar among those managed with OD treatment only and those receiving LTP.

**Funding:** KalVista Pharmaceuticals

**S4**

**Real-World Impact of Treated Hereditary Angioedema Attacks on Patients' Quality of Life**

Maeve O'Connor MD, Paula Busse MD, Timothy Craig DO, Cristine Radojicic MD, Sandra Christiansen MD, Julie Ulloa, Sherry Danese, Tomas Andriotti MD, Paul Audhya MD, Vibha Desai PhD

**Introduction:** Hereditary angioedema (HAE) is a rare genetic disease associated with unpredictable attacks of tissue swelling. We examined the impact of the patients' last treated HAE attack on physical and social components of quality of life (QoL) and the effect of early treatment.

**Methods:** Patients with type I/II HAE completed an online survey. Participants were ≥12 years old and treated ≥1 HAE attack with an on-demand therapy in the past 3 months. Physical and social QoL was assessed using modified Hereditary Angioedema Quality of Life Questionnaire.

**Results:** Respondents included 80 adults and 14 adolescents; 54% taking long-term prophylaxis (LTP) and 46% using on-demand therapy only (OD). Fifty-five percent rated their attack severity as moderate and 16% as severe or very severe. Median (interquartile range) time from attack onset to on-demand treatment was 2 hours (1-5 hours), with 19% treating in <1 hour. Sixty-five (69%) patients (68% OD; 71% LTP) indicated that their last attack had a medium/severe impact on their energy level and 32 patients (34%) indicated their last attack prevented participation in social activities (35% OD; 35% LTP). Of the patients who treated their attack in <1 vs ≥5 hours, 56% and 70%, respectively, indicated their attack had a medium/severe impact on their energy level, and 22% and 42% reported it prevented participation in social activities. Isolation due to HAE attack was experienced by 35 (37%) patients (33% OD; 41% LTP; 28% if treated <1 hour). Thirty-seven (39%) of patients (44% OD; 35% LTP) felt like a burden to people around them because they needed help treating their attack.

**Conclusions:** These results indicated patients' physical and social QoL was affected by their HAE attack, regardless of being on LTP. Attacks treated in <1 hour were associated with a lower impact on QoL, suggesting that education focused upon early attack treatment may be beneficial.

**Funding:** KalVista Pharmaceuticals

**S5**

**Sebetralstat for On-demand Treatment of Hereditary Angioedema Attacks: US Subgroup Analysis From the Double-blind, Placebo-controlled Phase 3 KONFIDENT Trial**

Daniel F. Soteres, Marc A. Riedl, William R. Lumry, Paula J. Busse, James Hao, Matthew Iverson, Michael D. Smith, Christopher M. Yea, Paul K. Audhya, Jonathan A. Bernstein

**Introduction:** KONFIDENT, an international, randomized, double-blind, placebo-controlled, 3-way crossover, phase 3 trial (NCT05259917) of an oral plasma kallikrein inhibitor, sebetralstat, for on-demand treatment of hereditary angioedema (HAE-C1INH), met the primary endpoint (NCT04208412). In this subgroup analysis, we assessed the efficacy and safety of sebetralstat in the US population compared to the overall cohort.

**Methods:** Patients aged ≥12 years with HAE-C1INH treated up to 3 eligible attacks (any location) with 1 or 2 doses of sebetralstat 300 mg, sebetralstat 600 mg, or placebo (in 1 of 6 treatment sequences). Primary endpoint: time to beginning of symptom relief (Patient Global Impression of Change rating of at least "A Little Better" for 2 time points in a row) within 12 hours of first dose. Safety was assessed primarily through collection of adverse events.

**Results:** Overall, 110 participants (median age 39.5 years; 60% female; 84% White; 22% receiving prophylaxis) from 17 countries treated 264 attacks. In the US cohort, 34 participants (median age 39.5 years; 79% female; 91.2% White; 47% receiving stable long-term prophylaxis) treated 78 attacks. The median time from attack recognition to treatment was 41 minutes (interquartile range [IQR] 6-140) in the overall cohort and 38 minutes (5-124) in the US cohort. In the overall cohort, median (IQR) time to beginning of symptom relief was: 1.6 hours (0.8-7.0) with sebetralstat 300 mg, 1.8 hours (1.0-3.8) with sebetralstat 600 mg, and 6.7 hours (1.3->12) with placebo. In the US cohort, median (IQR) time to beginning of symptom relief was: 1.3 hours (0.8-3.1) with sebetralstat 300 mg, 1.8 hours (1.3-3.9) with sebetralstat 600 mg, and 6.2 hours (2.3->12) with placebo. No serious treatment-related AEs and no AEs leading to trial discontinuation were reported in either overall or US cohorts.

**Conclusions:** The efficacy and safety of sebetralstat demonstrated in KONFIDENT was consistent between US participants and the overall cohort.

**Funding:** KalVista Pharmaceuticals

**S6**

**Real-World Effectiveness of Berotralstat in HAE With and Without C1-Inhibitor Deficiency**

James Tracy, John Anderson, Douglas T. Johnston, Meri LiVecchi, Lindsey Noble, Stephanie Wasilewski, Kana Hamada, Daniel Soteres

**Introduction:** Berotralstat is a first-line, once-daily oral prophylactic treatment for hereditary angioedema (HAE). Here, we report real-world effectiveness of berotralstat in patients with HAE with and without C1-inhibitor deficiency who initiated berotralstat in the United States.

**Methods:** Data were collected through the sole-source pharmacy and included patients with HAE with C1-inhibitor deficiency (HAE-C1INH; N=402) and physician-diagnosed HAE with normal C1-inhibitor level and function (HAE-nl-C1INH; N=302) who actively received berotralstat 110 or 150 mg between 12/16/2020–6/15/2023, for up to 540 days. Baseline attack rates were reported for the 90 days prior to berotralstat initiation and converted to a 30-day average for each patient. While on berotralstat, median ($25^{th}$,$75^{th}$ percentile) attacks/month were calculated over each 90-day period by averaging each patient-reported monthly attack rate.

**Results:** In patients with HAE-C1INH, the median baseline attack rate was 1.33 (0.33,3.33) attacks/month (n=335). In the first 90 days, the median attack rate decreased to 0.5 (0,1.50) attacks/month (n=365); median attack rates remained low with 0.5 (0,1.33), 0.5 (0,1.42), 0.5 (0,1.50), 0.5 (0,1.50), 0.5 (0,1.50) attacks/month through Days 91-180 (n=289), Days 181-270 (n=231), Days 271-360 (n=200), Days 361-450 (n=159), and Days 451-540 (n=119), respectively. In patients with HAE-nl-C1INH, the median baseline attack rate was 3 (1.33,>3.33) attacks/month (n=249), which decreased to 1 (0.50,2.50) attacks/month in the first 90 days (n=277), and remained consistently low with median monthly attack rates of 1 (0.33,2.75), 1.29 (0.33,2.92), 1 (0.29,2.50), 1.50 (0.50,2.75), and 1.50 (0.50,3) attacks/month through Days 91-180 (n=232), Days 181-270 (n=174), Days 271-360 (n=143), Days 361-450 (n=105), and Days 451-540 (n=79), respectively.

**Conclusions:** Long-term prophylaxis with berotralstat led to rapid and sustained reductions in monthly attack rates in HAE patients, regardless of C1-inhibitor function.

**Funding:** Funded by BioCryst Pharmaceuticals, Inc.

S7

**EPOPEX, Efficacy and Safety of Epicutaneous Immunotherapy in Peanut-Allergic Toddlers: 1-Year Open-Label Extension to EPITOPE**

Todd D. Green, MD, Matthew Greenhawt, MD, Julie Wang, MD, Hugh A. Sampson, MD, A. Wesley Burks, MD

**Introduction:** In the previously reported phase 3, double-blind, placebo-controlled EPITOPE study, 12 months of epicutaneous immunotherapy (EPIT) with a patch containing 250 µg peanut protein (VP250) resulted in a statistically significant treatment response vs placebo (responder rate: 67.0% vs 33.5%; $P<0.001$) in 362 peanut-allergic toddlers aged 1 through 3 years. Here, we report interim analyses that assessed the efficacy and safety of EPIT with VP250 from the first year of the open-label extension study, EPOPEX.

**Methods:** After 12 months of VP250 or placebo, EPITOPE participants enrolled in EPOPEX for up to 3 years of total treatment, with annual double-blind, placebo-controlled food challenges (DBPCFC) and safety assessments.

**Results:** 266 eligible EPITOPE participants enrolled in EPOPEX; 244 underwent Month 24 DBPCFC (n=166 VP250; n=78 placebo). After 24 months of VP250, 81.3% of participants reached an eliciting dose (ED) ≥1000 mg, 63.8% reached an ED ≥2000 mg, and 55.9% completed the DBPCFC without meeting stopping criteria. Using the EPITOPE primary endpoint definition, 83.9% were treatment responders following 24 months of VP250. No treatment-related anaphylaxis, serious treatment-related treatment-emergent adverse events or treatment-related discontinuations occurred during Year 2 in those who received 2 years of VP250. Local application-site reactions decreased in Year 2 vs Year 1. In placebo-treated EPITOPE participants, outcomes after 12 months of crossover to VP250 in EPOPEX were consistent with EPITOPE treatment results: 62.7% reached an ED ≥1000 mg, 36.5% reached an ED ≥2000 mg, 28.4% completed the DBPCFC without meeting stopping criteria, and 68.0% were responders. There was 1 event of treatment-related anaphylaxis in Year 2 of EPOPEX in placebo-treated EPITOPE participants who received 12 months of VP250 treatment.

**Conclusions:** Two years of VP250 in 1- to 3-year-old peanut-allergic toddlers resulted in continued increases in treatment effect, beyond those observed after 1 year, without any new safety signals. Treatment effect after 1 year of VP250 was confirmed in placebo-treated EPITOPE participants.

**Funding: DBV Technologies**

**S8**

**Remibrutinib in Chronic Spontaneous Urticaria: Efficacy and Safety at Week 24 from the REMIX-1/-2 Studies**

Sarbjit Saini MD, Ana Giménez-Arnau MD PhD, Michihiro Hide MD PhD, Mark Lebwohl MD, Gordon Sussman MD, Anne Barron BSc, Sibylle Haemmerle PhD, Isabelle Hampele PhD, Karine Lheritier PhD, El-Djouher Martzloff PhD, Artem Zharkov MD, Marcus Maurer MD

**Introduction** Remibrutinib is an oral, highly selective Bruton's tyrosine kinase inhibitor. Here we present primary analyses of phase 3 studies evaluating its efficacy and safety in chronic spontaneous urticaria (CSU).

**Methods** REMIX-1 and REMIX-2 are global, double-blind, placebo-controlled trials. Patients ≥18 years with CSU inadequately controlled by second-generation $H_1$-antihistamines were randomized 2:1 to remibrutinib 25 mg twice-daily or placebo (24 weeks), followed by open-label treatment with remibrutinib (28 weeks). Primary endpoint scenarios were change from baseline (CFB) in weekly 1) Urticaria Activity Score (UAS7) and 2) Itch Severity Score (ISS7) and Hives Severity Score (HSS7) at Week 12. Treatment-emergent adverse events (AEs) vital signs, electrocardiograma and laboratory parameters were assessed.

**Results** Overall, 470 and 455 patients were randomized in REMIX-1 (remibrutinib, n = 313; placebo, n = 157) and REMIX-2 (remibrutinib, n = 300; placebo, n = 155), respectively. Baseline UAS7 (mean ± SD) for remibrutinib and placebo was 30.7 ± 7.9 and 29.7 ± 7.6 (REMIX-1) and 30.2 ± 8.0 and 29.5 ± 7.5 (REMIX-2). Remibrutinib demonstrated fast (as early as Week 2) and superior improvements vs placebo at Week 12 in CFB-UAS7 (least squares mean ± SE; REMIX-1: −20.1 ± 0.7 vs −13.8 ± 1.0; REMIX-2: −19.6 ± 0.7 vs −11.7 ± 0.9), CFB-ISS7 (REMIX-1: −9.6 ± 0.3 vs −6.9 ± 0.5; REMIX-2: −9.0 ± 0.3 vs −5.7 ± 0.5), and CFB-HSS7 (REMIX-1: −10.5 ± 0.4 vs −6.9 ± 0.5; REMIX-2: −10.5 ± 0.4 vs −6.0 ± 0.5), . AEs with remibrutinib were comparable to placebo (59.9% vs 56.2% [REMIX-1]; 68.4% vs 73.2% of patients [REMIX-2]); liver function tests were balanced with remibrutinib and placebo.

**Conclusion** In the pivotal REMIX studies, both primary endpoint scenarios (CFB-UAS7, CFB-ISS7/CFB-HSS7) were met. Remibrutinib demonstrated a fast onset of action, superiority to placebo in improving CSU symptoms, and a favorable safety profile, suggesting remibrutinib may be an effective oral treatment for patients with CSU inadequately controlled by antihistamines.

**Funding:** Novartis Pharma AG, Basel, Switzerland.

**S9**

**Prevalence and Incidence of Diagnosed Chronic Spontaneous Urticaria (CSU) in the United States (US), Treatment Patterns and Disease Control**

Marc A. Riedl MD, Dhaval Patil MS, Jonathan Rodrigues MD, Maria-Magdalena Balp MD, Tara Raftery PhD, Irina Pivneva PhD, Jason Doran MBA, Arthur Voegel MA, James Signorovitch PhD, Gil Yosipovitch MD

**Introduction**: CSU is a skin disorder characterized by the spontaneous occurrence of hives, angioedema, or both, persisting for ≥6 weeks, and often several years. In the US, CSU affects several million people. This study assessed the prevalence and incidence of diagnosed CSU over time and described treatment patterns and disease control among adults with CSU.

**Methods**: This study used US HealthVerity comprehensive claims data to estimate the annual and cumulative prevalence and incidence of diagnosed CSU (≥2 ICD-10 diagnoses ≥6 weeks but <12 months apart) among adults aged ≥18 years (overall and by sex, age) from 2017 to 2022 in the database. The first CSU diagnosis was the index date. Adult patients with diagnosed CSU between 1/1/2017 to 3/31/2023 were selected to assess and describe patient characteristics and comorbidities during the 12-month pre-index (baseline) period, treatment patterns in the baseline and on or post-index (follow-up) periods, and proxy events representing lack of disease control (defined as any CSU-related emergency room [ER], inpatient or urgent care visit, or any use of biologics, corticosteroids, or immunosuppressant) post-index.

**Results**: The cumulative prevalence of diagnosed CSU (2017–2022) was estimated at 0.61% and was much higher among females (0.84%) relative to males (0.33%). The annual prevalence of diagnosed CSU in the data was estimated at 0.15% in 2017 and 0.20% in 2022 (females: 0.22% and 0.28%; males: 0.08% and 0.10%). Cumulative prevalence was highest among females aged 30–39 at 1.00% followed by females aged 40–49 at 0.98%. The annual incidence was estimated at 0.09% in 2017, 2018, and 2019, 0.07% in 2020, 0.09% in 2021, and 0.08% in 2022; and was higher among females across the entire study period. Among the 193,688 selected patients, the mean age was 44.2 years (SD: 15.3), 76.3% were female; 66.7% were covered by commercial insurance, 26.8% by Medicaid, and 5.5% by Medicare Advantage. The most common baseline comorbidities included allergic rhinitis (19.7%), chronic pulmonary disease (19.0%), asthma (15.1%), diabetes (12.0%), and mild liver disease (5.4%). For 56.5% patients, ≥1 treatment types among biologics, corticosteroids, immunosuppressive agents, immunomodulator agents, or leukotriene receptor agonists (LTRA) were prescribed during baseline. These treatments were prescribed to 82.8% of patients in follow-up (on or post CSU diagnosis date) as well; ≥2 treatment types were prescribed for 11.4% at baseline and 32.4% in follow-up. Corticosteroids were the most commonly prescribed treatments during baseline (oral: 36.2%, topical: 22.7%, injectable: 18.4%) and follow-up (oral: 61.5%, topical: 40.4%, injectable: 33.4%). Other common treatment types included LTRAs (baseline: 10.8%; follow-up: 27.2%) and biologics (baseline: 1.6%; follow-up: 10.9%). Over-the-counter antihistamines, a common treatment class, were not included as HealthVerity captures only prescription medications. For 59.1% of patients, proxy events representing lack of disease control were observed after the index date; among them 72.9% had a corticosteroids prescription with a CSU-related visit regardless of setting ≤15 days prior, 25.5% had CSU-related ER, inpatient, or urgent care visits, and 8.0% had biologics.

**Conclusion**: The cumulative diagnosed CSU prevalence in the US (2017–2022) was estimated at 0.61%, and was found to be higher for females relative to males with the highest prevalence and incidence for females aged 30–39. While most patients were prescribed conventional types of treatments before and after first CSU diagnosis, 59% experienced a proxy event representing lack of disease control after CSU diagnosis. Despite potential adverse events, corticosteroids remained the predominant treatment both before and after diagnosis, suggesting a potential unmet need for treatment options and improvement in CSU patient care.

**Funding:** Novartis Pharma AG, Basel, Switzerland

**S10**

**Coexisting Allergic Rhinitis in Patients with Moderate-To-Severe Asthma Initiating Dupilumab In Real-World Clinical Practice: The RAPID Registry Study**

A. T. Peters, MD; A. Côté, MD; X. Muñoz, MD, PhD; C. Xia, Ph.D; S. Nash, MD; M. Hardin, MD; L. de Prado Gómez, PharmD; H. Sacks, MD; Nicholas Jellots*, PharmD; J. A. Jacob-Nara, MD, DHSc; Y. Deniz, MD; P. J. Rowe, MD; X. Soler, MD

**Introduction:** Patients with asthma often present with coexisting type 2 inflammatory diseases such as allergic rhinitis (AR). The RAPID (NCT04287621) global prospective registry characterizes patients with asthma initiating dupilumab in real-world clinical practice. This analysis assessed AR prevalence and baseline characteristics in these patients.

**Methods:** RAPID enrolled patients ≥12 years initiating dupilumab for asthma (primary indication) according to country-specific prescribing information. Outcomes assessed were AR prevalence and characteristics of patients with/without AR.

**Results:** Of 205 patients included in this analysis, 166 (81%) reported history of AR, 165 (80%) ongoing AR, and 39 (19%) no AR. In patients with vs without AR, 115 (69%) vs 19 (49%) were female. Mean (SD) age was 48.1 (17.5) vs 58.5 (14.2) years, time since first asthma diagnosis was 21.9 (18.6) vs 16.8 (13.9) years, and asthma control (6-item Asthma Control Questionnaire [ACQ-6]) score was 2.4 (1.20) vs 2.2 (1.09). 60 (36.1%) patients with AR reported having AR for a mean (SD) duration of 12.5 (18.9) years. Allergic Rhinitis Analog Scale (AR-VAS) score was 48.0 (29.2) (scale: 0–100). 63 (38%) patients used nasal steroids, 9 (5%) allergen immunotherapy, and 8 (5%) ipratropium for AR.

**Conclusions:** 80% of patients with asthma initiating dupilumab in real-world clinical practice reported AR. The patients were predominantly female, with an earlier onset of asthma vs those without AR, and 38% of patients used nasal steroids. Asthma control scores were similar regardless of coexisting AR. The low patient number of some subgroups may limit the interpretation of these results.

**Funding:** Sanofi and Regeneron Pharmaceuticals Inc.

S11

**Dupilumab Improves Health-Related Quality of Life and Work Productivity Among Adults with Moderate-to-Severe Atopic Dermatitis in Clinical Practice: 4-Year Follow-up Results from the RELIEVE-AD Study**

Zhixiao Wang PhD, Bruno Martins PhD, Jingdong Chao PhD, Min Yang PhD, Kerry Noonan BA, Brad Shumel MD, Debra Sierka PharmD, Bruce Strober PhD

**Introduction:** RELIEVE-AD included adults with moderate-to-severe atopic dermatitis (AD) who initiated dupilumab in real-world clinical practice. Results showed improvements in symptoms, disease control, and treatment satisfaction, sustained through 4 years. Here we present 4-year data from RELIEVE-AD reporting on health-related quality of life (HRQoL) and work productivity (WP).

**Methods:** RELIEVE-AD was a single-arm, prospective, observational study of adults with moderate-to-severe AD who received dupilumab and agreed to participate in surveys at baseline and 1, 2, 3, 6, 9, 12, 33, and 48 months (M). Outcomes reported here are the Dermatology Life Quality Index (DLQI; range 0-30), evaluating HRQoL, and the Work Productivity and Activity Impairment-Atopic Dermatitis (WPAI-AD; range 0–100%) questionnaire, assessing productivity impact. Statistical significance, comparing each time point to baseline, was determined using generalized estimating equations to account for correlated data from the same patients.

**Results:** Among 698 patients completing the baseline survey, 353 (50.6%) completed the 48M survey. Patient demographics and clinical characteristics were similar for patients completing the 48M survey vs those completing the baseline survey. Mean DLQI score decreased from 14.4 at baseline to 3.0 at 48M and proportion of patients reporting no effect of AD on their lives (DLQI 0/1) increased from 1.1% to 55.2%. Mean Productivity Impairment decreased from 40.3% at baseline to 8.3% (48M) and Mean Total Activity Impairment decreased from 45.6% at baseline, to 9.1% (48M) (WPAI-AD score).

**Conclusion:** In real-world clinical practice, dupilumab treatment resulted in improvements in HRQoL and WP, sustained over 4 years of treatment.

**Funding:** Sanofi and Regeneron Pharmaceuticals Inc.

S12

**Dupilumab Treatment Reduces Signs in Patients with Atopic Hand and Foot Dermatitis: Results from a Phase 3, Randomized, Double-Blind, Placebo-Controlled Trial**

Eric L. Simpson MD, Weily Soong MD, Margitta Worm MD, Andreas Pinter MD, Koji Masuda PhD, Liyang Shao PhD, Ariane Dubost-Brama MD, Ashish Bansal MD, Andrew Korotzer PhD, Ana B. Rossi MD

**Introduction:** Dupilumab has previously shown overall efficacy in treating atopic hand and foot dermatitis. Here we report the effect of dupilumab treatment on individual signs of atopic hand and foot dermatitis.

**Methods:** The phase 3, randomized, double-blind LIBERTY-AD-HAFT (NCT04417894) trial enrolled patients aged ≥12 years with moderate-to-severe (Investigator's Global Assessment [IGA] score of 3/4) atopic hand and foot dermatitis. Patients were randomized to dupilumab monotherapy 300 mg every 2 weeks (q2w) in adults; 200/300 mg q2w in adolescents, or placebo for 16 weeks. This analysis presents the proportion of patients reporting absent, mild, moderate, or severe erythema, scaling/flaking, lichenification, vesiculation/erosion, edema, and fissures, assessed by the modified total lesion sign score (mTLSS) in hands and feet.

**Results**: At baseline, most patients had scores of moderate or severe signs on their hands. Of the 133 patients enrolled, over 65% of patients treated with dupilumab (n = 67) achieved an absent or mild score by Week 16 in each of the signs/symptoms assessed. Proportion of patients with absent or mild hand scores increased from baseline to Week 16 in erythema (9% vs 71.6%), scaling/flaking (16.4% vs 74.7%), lichenification (4.5% vs 65.6%), vesiculation/erosion (43.3% vs 89.6%), edema (44.7% vs 86.6%), and fissures (23.9% vs 83.5%). Proportion of patients with absent or mild foot scores increased from baseline to Week 16 in erythema (56.7% vs 80.6%), scaling/flaking (56.7% vs 82.1%), lichenification (53.8% vs 82.1%), vesiculation/erosion (76.1% vs 86.6%), edema (76.1% vs 88.1%), and fissures (77.6% vs 86.6%). Safety was consistent with the known dupilumab safety profile in patients with atopic dermatitis.

**Conclusions:** Dupilumab treatment in patients improves signs of hand and foot dermatitis, including erythema, scaling/flaking, lichenification, vesiculation/erosion, edema, and fissures at week 16.

**Funding:** Sanofi and Regeneron Pharmaceuticals, Inc.

S13

**Dupilumab Induces Clinical Remission in Children With Uncontrolled, Moderate-to-Severe, Type 2 Inflammatory Asthma**

Leonard B. Bacharier, MD, Theresa W. Guilbert, MD, Jorge F. Maspero, MD, Monika Gappa, MD, Sharon Dell, MD, Arman Altincatal, MS, Oliver Ledanois, MD, Rebecca Gall, MD, Harry Sacks, MD, Juby A. Jacob-Nara, MD, Yamo Deniz, MD, Paul J. Rowe, MD

**Introduction:** Sustained absence of exacerbations, normal lung function, controlled symptoms, and no systemic corticosteroid use in a 12-month period have been proposed as a composite multicomponent endpoint for on-treatment clinical remission in adults with asthma. Dupilumab, a fully human monoclonal antibody, blocks the shared receptor component for interleukins 4/13, central drivers of type 2 inflammation. In the phase 3 LIBERTY ASTHMA VOYAGE study (NCT02948959), dupilumab reduced annualized severe exacerbation rate and improved lung function and asthma control vs placebo in children aged 6 to 11 years with moderate-to-severe asthma and type 2 inflammation (baseline blood eosinophil count ≥150 cells/μL or fractional exhaled nitric oxide ≥20 ppb). Safety was consistent with the known dupilumab safety profile, with the addition of helminth infections. This post hoc analysis assessed the effect of dupilumab in achieving on-treatment clinical remission in children using a proposed composite, multicomponent endpoint.

**Methods:** We evaluated the proportions of patients in VOYAGE meeting the composite endpoint for on-treatment clinical remission during 52 weeks on treatment using criteria: no exacerbations/use of oral corticosteroids; above the lower limit of normal for pre-bronchodilator ratio of forced expiratory volume in 1 second ($FEV_1$) to forced vital capacity (z-score >−1.64) and pre-bronchodilator $FEV_1$ (z-score >−1.64); and 5-item Asthma Control Questionnaire (ACQ-5) score <0.75/ <1.5.

**Results**: The analysis included 350 children (placebo, n=114; dupilumab, n=236). At baseline, no children in either treatment group met the requirements for remission using ACQ-5 <0.75. At Week 52 a significantly greater proportion of children treated with dupilumab vs placebo achieved clinical remission (41.9% vs 23.7%; *P*=0.0008). Similar results were seen using ACQ-5 <1.5.

**Conclusion**: Dupilumab vs placebo significantly increased the percentage of patients with uncontrolled, moderate-to-severe asthma and type 2 inflammation who met the proposed on-treatment clinical asthma remission composite endpoint by Week 52 of VOYAGE.

**Funding:** Sanofi and Regeneron Pharmaceuticals, Inc.

S16

**Efficacy and safety of amlitelimab (an OX40 ligand antibody) in patients with moderate-to-severe atopic dermatitis: 52-week results from a Phase 2b trial (STREAM-AD)**

Stephan Weidinger, MD, Carolina Guerreiro, PharmD, Andrew Blauvelt, MD, Kim Papp, MD, Adam Reich, MD, Chih-Hung Lee, MD, Margitta Worm, MD, Charles Lynde, MD, Yoko Kataoka, MD, Peter Foley, MBBS, Xiaodan Wei, PhD, Anne-Catherine Solente, MSc., Christine Weber, MD, Fabrice Hurbin, PharmD, Natalie Rynkiewicz, PhD, Karl Yen, MD, John T. O'Malley MD, Charlotte Bernigaud, MD

**Introduction**: Amlitelimab is an OX40 ligand (OX40L) monoclonal antibody inhibiting OX40L-OX40 interactions. Data from the 28-week amlitelimab maintenance/withdrawal period (Part 2) of the Phase 2b (STREAM-AD, NCT05131477) dose-ranging trial in adults with moderate-to-severe atopic dermatitis (AD) are presented.

**Methods:** STREAM-AD Part 2 included clinical responders from Part 1, defined as participants achieving EASI-75 and/or IGA 0/1 at Week 24. Of 390 participants enrolled in Part 1, 190 entered Part 2. Participants were re-randomized 3:1 to withdraw treatment or continue pre-Week 24 subcutaneous Q4W dose (250mg with 500mg loading dose (LD), n=34 [treatment withdrawal]/n=13 [continuing]; 250mg, n=28/n=12; 125mg, n=33/n=12; 62.5mg, n=35/n=7; placebo responders continuing placebo, n=16), and were followed to Week 52 for efficacy. Statistical analysis was conducted using two approaches: imputing endpoint as non-responder after rescue medication use (NRI) or including all measurements regardless of rescue use (treatment policy).

**Results:** Maintenance of EASI-75 and/or IGA 0/1 response at Week 52 was observed in 59%, 63%, 55%, and 66% of clinical responders withdrawn from Q4W dose of 250mg with LD, 250mg, 125mg, and 62.5mg, respectively (NRI). Using treatment policy, 77%, 82%, 67%, and 74% maintained response off-drug, respectively. Those continuing treatment had numerically higher maintenance response rates. AD-related biomarkers remained decreased over 28 weeks, including in participants withdrawn from amlitelimab with ≥95% of the drug eliminated from serum for the last 8 weeks. The safety profile remained generally consistent with Part 1 without new concerns identified in Part 2.

**Conclusion:** Maintenance of clinical responses were demonstrated for 28 weeks in the majority of patients, both on- and off-amlitelimab.

**Funding:** Kymab LTD, a Sanofi company.

S17

**Dupilumab Reduces Inflammatory Biomarkers in Patients Aged 6 Months to 18 Years With Moderate-to-Severe or Severe Atopic Dermatitis**

Lisa A. Beck, MD; Antonella Muraro, MD, PhD; Mark Boguniewicz, MD; Zhen Chen, MBA, PhD; Noah Levit, MD, PhD; Ainara Rodríguez Marco, MD*

**Introduction:** Elevated levels of inflammatory biomarkers are observed in atopic dermatitis (AD). Dupilumab is associated with reduction of type 2 inflammatory biomarkers in adults, but data from adolescent and pediatric patients are lacking.

**Methods:** We report type 2 and general inflammatory biomarker serum levels (LDH, TARC/CCL17, total IgE) from patients with moderate-to-severe or severe AD (the latter in patients aged 6–11 years) enrolled in randomized, double-blind, placebo-controlled phase 3 studies receiving: dupilumab 200/300mg every 4 weeks (q4w) + topical corticosteroids (TCS; n=83), or placebo+TCS (n=79) (0.5–5 years; NCT03346434 part B); dupilumab 100/200mg q2w + TCS (n=122), or 300mg q4w + TCS (n=122), or placebo+TCS (n=123) (6–11 years; NCT03345914); and dupilumab 200/300mg q2w (n=82), or dupilumab 300mg q4w (n=84), or placebo (n=85) (12–17 years; NCT03054428).

**Results:** Reduction in median percentage change from baseline in TARC/CCL17 (pg/mL) and LDH (U/L) was significantly higher in all dupilumab-treated arms across age groups ($P$<0.0001 at Week 16). Reduction in median change from baseline at Week 16 in total IgE (kU/L) was higher in dupilumab-treated patients than placebo for ages 0.5–5 (difference in median change [95%CI]: −2201.1 [−4497, −902.8], $P$<0.0001); 6–11 (−2338 [−3391, −1473] and −1888 [−2949, −1038], both $P$<0.0001) and 12–17 years (−2524 [−3579, −1783.6] and −1996.6 [−3260, −1308], both $P$<0.0001).

**Conclusions:** Dupilumab treatment in patients aged 6 months to 18 years with moderate-to-severe or severe AD reduces levels of type 2 and general inflammatory biomarkers, reflecting reduction of systemic general and type 2 inflammation.

**Funding:** Sanofi and Regeneron Pharmaceuticals

S19

**Dupilumab normalized the expression of genes dysregulated in eosinophilic esophagitis (EoE) in esophageal biopsies from a clinical trial of children aged 1–11 years**

Marc E. Rothenberg, MD, Wei Keat Lim, Matthew F. Wipperman, PhD, Mirna Chehade, MD, Evan S. Dellon, MD, Navneet Virk Hundal, MD, Shauna Schroeder, MD, Christopher Parrish, MD, Ruiqi Liu, PhD, Elizabeth Laws, PhD, Eric Mortensen, MD, Lila Glotfelty, MD, Arsalan Shabbir, MD, Alexandra Hicks, PhD, Jennifer D. Hamilton, PhD

**Introduction:** Eosinophilic esophagitis (EoE) is a chronic, type 2 inflammatory disease, with similar genetic abnormalities across ages. This study assessed dupilumab efficacy on transcriptome outcomes in children aged 1 to <12 years with EoE from the EoE KIDS phase 3 trial (NCT04394351).

**Methods:** Esophageal biopsies were taken from proximal, mid, and distal regions at baseline, Week (W) 16 following treatment with higher-exposure dupilumab (weight-tiered dosing) or placebo, and W52 following higher-exposure dupilumab. Transcriptome heatmaps were generated using EoE Diagnostic Panel (EDP; disease gene expression signature) and type 2 Inflammation Signature (T2INF) genes. EDP and T2INF Normalized Enrichment Scores (NES) from Gene Set Enrichment Analysis were computed for the change from baseline to W16 (negative NES indicates reversal of disease signatures; positive NES indicates more active disease). Correlation was calculated between gene expression changes in patients <12 years receiving higher-exposure dupilumab at W16 in EoE KIDS and patients ≥12 at W24 receiving dupilumab 300 mg QW in a prior trial.

**Results:** At W16, overall gene signatures were normalized with higher-exposure dupilumab but relatively unchanged with placebo; dupilumab significantly suppressed both signatures versus placebo with median NES of −2.630 versus +0.180 for EDP and −1.895 versus +0.340 for T2INF (both p<0.0001). Changes were maintained with continued dupilumab treatment at W52. Pearson correlation of $\log_2$ fold change in all genes between children and adolescents/adults was 0.978.

**Conclusion:** Dupilumab treatment normalized gene expression in children aged 1 to <12 years with active EoE, strongly correlated with data from adolescents/adults in another EoE dupilumab study.

**Funding:** Sanofi and Regeneron Pharmaceuticals Inc

S20

**Effect of Benralizumab versus Mepolizumab on Reduction in Oral Glucocorticoid Use in Patients with Eosinophilic Granulomatosis with Polyangiitis: Phase 3 MANDARA Study**

Parameswaran Nair, MD, Michael E. Wechsler, MD, Arnaud Bourdin, MD, PhD, Peter A. Merkel, MD, MPH, Bernhard Hellmich, MD, David R. W. Jayne, MD, Lena Börjesson Sjö, PhD, Ying Fan, PhD, Andrew Menzies-Gow, PhD, Sofia Necander, MD, Anat Shavit, DVM

**Introduction:** Eosinophilic granulomatosis with polyangiitis (EGPA) is characterized by asthma, eosinophilia, and vasculitis. Oral glucocorticoid (OGC) use is associated with significant adverse events, and high relapse rates during tapering of OGCs.

**Methods:** MANDARA, a Phase 3, randomized, double-blind, 52-week, non-inferiority, head-to-head study (NCT04157348) evaluated the efficacy/safety of benralizumab 1x30 mg versus mepolizumab 3x100 mg, subcutaneously Q4W, in adults with relapsing/refractory EGPA requiring ≥7.5 mg/day OGC (prednisolone/prednisone) ± immunosuppressive therapy. Investigators were encouraged to taper OGCs for patients with no active EGPA symptoms (BVAS=0), according to standard practice and clinical judgement.

**Results**: 140 patients (mean [SD] age, 52.3 [14.1] years; 60.0% women) were randomized 1:1 to benralizumab (n=70) or mepolizumab (n=70). The median (min–max) baseline OGC daily dose was 10.0 (5.0–30.0) mg/day and 10.0 (7.5–40.0) mg/day in benralizumab and mepolizumab recipients; at Weeks 49–52, it was 1.18 (0.0–16.6) mg and 3.00 (0.0–25.7) mg, and the mean (SD) percentage change from baseline was –74.30% (36.491) and –64.78% (44.390). Over 52 weeks, the median (min–max) cumulative OGC use was 1813.18 (485.7–5673.9) mg versus 1846.28 (572.5–7998.9) mg with benralizumab versus mepolizumab. Reductions of ≥50% in daily OGC dose at Weeks 32 and 52 were seen in 80.00% and 90.00% of benralizumab versus 69.12% and 85.29% of mepolizumab recipients (HR: 1.32 [95% CI 0.92, 1.88]; p=0.1431). The proportion of patients who completely withdrew OGC use at Weeks 32 and 52 was higher in the benralizumab (15.92% and 42.02%) versus mepolizumab recipients (4.46% and 26.85%; HR: 1.84 [95% CI: 1.06, 3.27]; p=0.0291). There was no difference in the number of patients with relapse (both n=21; 30.0%).

**Conclusions:** Both treatments facilitated reduction in OGC use in patients with EGPA. Benralizumab-treated patients achieved lower OGC doses and were more likely to be fully tapered off OGCs than mepolizumab-treated patients.

**Funding:** AstraZeneca

S21

**Complete Remission in Eosinophilic Granulomatosis with Polyangiitis (EGPA) in the MANDARA Trial of Benralizumab versus Mepolizumab**

Michael E. Wechsler, MD, Nancy Agmon-Levin, MD, David R. W. Jayne, MD, Christian Pagnoux, MD, MPH, Ulrich Specks, MD, Lena Börjesson Sjö, PhD, Sofia Necander, MD, Anat Shavit, DVM, Claire Walton, MSc, Peter A. Merkel, MD, MPH

**Introduction:** In patients with EGPA there is a need to minimize long-term use of oral glucocorticoids (OGCs) to avoid associated adverse outcomes, while sustaining remission and avoiding relapse. MANDARA, a Phase 3, randomized, double-blind study (NCT04157348) evaluated benralizumab 1x30 mg versus mepolizumab 3x100 mg, subcutaneously Q4W, in patients with relapsing/refractory EGPA. Non-inferiority was demonstrated for remission (Birmingham Vasculitis Activity Score [BVAS]=0 and OGC ≤4 mg/day), at both Weeks 36 and 48 (primary endpoint).

**Methods:** *Post-hoc* analyses assessed the percentage of patients achieving a more stringent definition of complete remission: BVAS=0 and OGC=0 mg/day at both Weeks 36 and 48, and being relapse-free. Remission was considered sustained if criteria were first met by Week 40 and maintained until the end of the 52-weeks. Investigators were encouraged to taper OGCs for patients who reached BVAS=0, according to standard practice and clinical judgement.

**Results:** 140 patients received benralizumab (n=70) or mepolizumab (n=70). Adjusted percentage of patients with remission was 59.2% with benralizumab versus 56.5% with mepolizumab (difference: 2.71 [95% CI: –12.54, 17.96]; p=0.7278; Wechsler et al. *N Engl J Med.* 2024;390:911–921). Adjusted percentage of patients with complete remission was 23.5% versus 11.1% in the benralizumab and mepolizumab groups (difference: 12.47 [95% CI: 0.46, 24.48]; p=0.0418). Sustained remission was achieved by 60.0% and 55.7% patients (HR: 1.30 [95% CI: 0.84, 2.04]; p=0.5874) in the benralizumab and mepolizumab groups; and sustained complete remission was achieved by 24.3% and 14.3% patients (HR: 2.10 [95% CI: 0.97, 4.84]; p=0.1228).

**Conclusions:** Similar percentages of patients with EGPA receiving benralizumab and mepolizumab achieved remission, and a numerically higher percentage of benralizumab-treated patients achieved the more stringent definition of complete remission. Sustained treatment goals for patients with EGPA receiving anti-IL-5/Rα therapy, including full tapering of OGCs and avoiding relapses, may be achievable.

**Funding:** AstraZeneca

S22

**Lebrikizumab Maintains Improvements in the Patient-Oriented Eczema Measure Through 2 Years of Treatment in Patients with Moderate-to-Severe Atopic Dermatitis**

David Rosmarin, Andreas Wollenberg, Mark Boguniewicz, Carolyn Jack, Sebastien Barbarot, Vivian Shi, Marjolein de Bruin-Weller, Louise DeLuca-Carter, Evangeline Pierce, Chaoran Hu, Chunyuan Liu, Heidi Crane, Laia Bardolet, and Martin Steinhoff

**Introduction:** Lebrikizumab treatment in moderate-to-severe atopic dermatitis (AD) improved patient-reported outcomes in the phase-3 trials ADvocate1&2 (monotherapy) through 52 weeks and ADhere (combination topical corticosteroids) through 16 weeks. We report the impact of lebrikizumab on AD signs/symptoms as reported by the Patient-Oriented Eczema Measure (POEM) at week 104 of continuous treatment in ADjoin, a long-term extension.

**Methods:** ADvocate1&2 16-week lebrikizumab responders (achieved EASI-75 or IGA 0/1) who were re-randomized to 250mg lebrikizumab every 2 or 4 weeks (Q2W or Q4W) for 36 weeks, continued the same treatment in ADjoin (52 additional weeks). ADhere 16-week lebrikizumab responders were randomized to Q2W or Q4W in ADjoin (88 additional weeks). POEM assesses patient-reported symptoms over the previous week; higher scores (range=0-28) indicate more severe disease; ≥4-point change is clinically important.

**Results:** For ADvocate1&2, mean POEM scores at 52 versus 104 weeks continuous lebrikizumab treatment were 6.0 versus 6.0 (Q2W); 7.0 versus 5.3 (Q4W). POEM=0/1 response rates were 20.7 versus 19.6% (Q2W); 18.2 versus 33.3% (Q4W). Patients reporting ≥4-point improvement from parent-study baseline to 52 versus 104 weeks were 98.8 versus 100% (Q2W); 89.9 versus 96.3% (Q4W).
For ADhere, mean POEM scores at 16 versus 104 weeks continuous lebrikizumab treatment were 8.8 versus 5.4 (Q2W); 7.3 versus 5.8 (Q4W). POEM=0/1 response rates were 12.5 versus 17.1% (Q2W); 10.3 versus 38.9% (Q4W). Patients reporting ≥4-point improvement from ADhere baseline to 16 versus 104 weeks were 80.4 versus 94.3% (Q2W); 89.3 versus 83.3% (Q4W).

**Conclusions:** Lebrikizumab maintains improvements in POEM through 2 years of treatment in patients with moderate-to-severe AD.

**Funding**: Lilly

S23

**Is Asthma Clinical Remission Achievable by Inhaled Therapy? A Post Hoc Analysis of Single Inhaler Triple Therapy with FF/UMEC/VI in the CAPTAIN Trial**

Njira Lugogo MD, John Oppenheimer MD, Jodie Crawford MSc, Tom Corbridge MD, Peter Howarth MBBS, DM, FRCP, Emmeline Igboekwe PharmD, Alison Moore PhD, Stephen G Noorduyn PhD(c), David Slade MD, Stephen Weng PhD, Ian Pavord FMedSci

**Introduction:** The composite endpoint of clinical remission (CR) is a treatment goal for patients with asthma. It is currently unknown if CR is achievable in patients treated with inhaled therapy alone. This post-hoc analysis of the CAPTAIN Trial evaluated patients' ability to achieve CR on FF/VI and FF/UMEC/VI.

**Methods:** CAPTAIN, a phase IIIa RCT, investigated once-daily single-inhaler FF/UMEC/VI versus FF/VI in patients ≥18 years with uncontrolled moderate-to-severe asthma despite maintenance ICS/LABA. CR was defined as no systemic corticosteroid use, no severe exacerbations, ACQ-5 total score ≤1.5, and change from baseline in trough FEV1 ≥100mL. CR was assessed at Weeks 24 and 52 for FF/UMEC/VI 100/62.5/25 or 200/62.5/25mcg versus FF/VI 100/25 or 200/25mcg. Odds/risk ratios (OR/RR; 95% CIs) were calculated for Week 24 data. Missing data/study withdrawals/lost-to-follow-up were considered non-responders.

**Results:** At Week 24, 31%(127/406) and 36%(146/408) of patients receiving FF/UMEC/VI 100 or 200 achieved CR versus 19%(77/407) and 26%(104/406) receiving FF/VI 100 or 200; similar achievements were seen for patients with data at Week 52 (FF/UMEC/VI 100: 30%[27/91]; 200: 38%[35/91]; FF/VI 100: 21%[18/87]; 200: 24%[22/91]). Patients receiving FF/UMEC/VI 100 were more likely to achieve CR at Week 24 than those receiving FF/VI 100 (OR: 1.93[1.39, 2.68], p<0.001; RR: 1.65[1.29, 2.12], p<0.001), as was seen for FF/UMEC/VI 200 versus FF/VI 200 (OR: 1.62[1.19, 2.19], p=0.002; RR: 1.40[1.13, 1.72], p=0.002). All p-values are nominally statistically significant.

**Conclusions:** A greater proportion of patients with FF/UMEC/VI demonstrated CR than FF/VI. CR is a feasible treatment goal for patients with moderate-to-severe asthma receiving FF/UMEC/VI and FF/VI.

**Funding:** GSK (205715; NCT02924688)

S24

**Relief and Resolution of Attack Symptoms Following On-Demand Treatment With a Single Dose of Oral Bradykinin B2 Receptor Antagonist Deucrictibant Immediate-Release Capsule in Patients With Hereditary Angioedema**

H. Henry Li, MD, PhD; John Anderson, MD; Marc A. Riedl, MD, MS; Peng Lu, MD, PhD; Marcus Maurer, MD

**Introduction**: Hereditary angioedema (HAE) attacks are caused by excess bradykinin activating bradykinin B2 receptors. Deucrictibant is a potent, orally administered antagonist of the bradykinin B2 receptor under development for on-demand and prophylactic treatment of HAE attacks.

**Methods**: RAPIDe-1 (NCT04618211) was a Phase 2, double-blind, placebo-controlled, crossover trial of deucrictibant immediate-release (IR) capsule for treatment of HAE-1/2 attacks. Seventy-four participants were enrolled (Canada, Europe, Israel, UK, US). Substantial symptom relief was assessed by time to ≥50% reduction in the 3-symptom composite visual analogue scale (VAS-3). Symptom resolution was assessed by time to "almost complete or complete symptom relief" using VAS-3 (all 3 individual VAS scores ≤10) as well as achievement of "a lot better or resolved" on Treatment Outcome Score patient-reported outcome (TOS PRO).

**Results**: Attacks treated with a single dose of deucrictibant IR capsule at doses of 10, 20 or 30 mg achieved earlier substantial symptom relief (median time: 3.3-4.0 hours) and symptom resolution (5.8-20.0 hours) by VAS-3 compared with attacks treated with placebo (22.8 and 42.0 hours, respectively). The percentage of attacks achieving symptom resolution by VAS-3 within 24 hours was approximately 5-fold greater with deucrictibant IR capsule (71.4-78.4%) compared with placebo (15.7%). Symptom resolution by TOS PRO was also achieved earlier for attacks treated with a single dose of deucrictibant IR capsule, with a median time of 4.0-5.9 hours vs. 23.3 hours for placebo-treated attacks. The percentage of attacks achieving symptom resolution by TOS PRO within 24 hours for deucrictibant IR capsule was 78.6%-86.2% compared with 22.4% for attacks treated with placebo.

**Conclusions**: Primary and post-hoc analyses of the RAPIDe-1 Phase 2 trial provide consistent evidence that the majority of HAE attacks achieved symptom resolution within 24 hours after a single dose of oral deucrictibant IR capsule.

**Funding:** RAPIDe-1 is a Pharvaris

S25

**13.2 mg Intranasal Epinephrine Spray Demonstrates Comparable PK/PD and Safety to 0.3 mg Epinephrine Autoinjector**

Karen Rance, DNP, Allen Hunt, MD, David A. Dworaczyk, PhD

**Introduction:** NDS1C 13.2 mg is a self-administered, intranasal dosage form of epinephrine under development for the treatment of type 1 allergic reactions, including anaphylaxis. The present study compares the pharmacokinetic (PK), pharmacodynamic (PD), and safety profiles of intranasal epinephrine with epinephrine administered intramuscularly.

**Methods:** An open-label, 3-period, crossover study was conducted in 100 healthy adult volunteers to assess the relative bioavailability of a single intranasal dose of epinephrine, 13.2 mg, consisting of 2 consecutive 6.6 mg sprays (opposite and single nostril dosing) compared to an intramuscular 0.3 mg autoinjector and 0.5 mg manual syringe. Unadjusted and baseline-adjusted epinephrine concentrations of 50, 100, and 200 pg/mL at 10, 20, 30, and 60-minutes post-dose were evaluated.

**Results:** PK parameters for the 13.2 mg intranasal dose exceeded those of the 0.3 mg intramuscular autoinjector with a rapid and higher $C_{max}$, (intranasal 429.4, autoinjector 328.6), and greater systemic exposure; $AUC_{0-360}$ intranasal=39,060 g*min/mL and autoinjector=17,440 g*min/mL. Similar results were observed compared to the 0.5 mg manual syringe. PK parameters for opposite and same nostril dosing were higher than both intramuscular doses, except $T_{max}$, which was bracketed between the two intramuscular doses; intranasal opposite and same nostril=20 min, autoinjector=14.9 min, manual syringe=45 min. Similar effects on blood pressure and heart rate were observed for intranasal and autoinjector administration. Intranasal epinephrine was safe and well-tolerated, with no serious or unexpected adverse events reported.

**Conclusions:** NDS1C addresses the unmet need for a needle-free, convenient, and effective dose delivery system for self-administration of epinephrine. These data support NDS1C as an alternative to 0.3 mg intramuscular autoinjector for acute anaphylaxis management.

**Funding:** Bryn Pharma.

S26

Pharmacokinetic and Pharmacodynamic Effects of 13.2 mg Intranasal Epinephrine Treatment in Congestion

**Karen Rance, DNP, Allen Hunt, MD, Mike Di Spirito, MSc, Mary Lor, BSc, David A. Dworaczyk, PhD**

**Introduction:** Nasal congestion could affect the absorption of an epinephrine nasal spray (ENS). The objective of this study was to compare the pharmacokinetics (PK) of 13.2 mg ENS with and without nasal congestion to intramuscular (IM) treatments.

**Methods:** This Phase I, open-label, 4-period study enrolled 51 healthy adults with seasonal allergies into 2 cohorts that received 13.2 mg ENS (NDS1C) administered as 2 consecutive sprays in either opposite nostrils (Cohort 1) or the same nostril (Cohort 2). Both cohorts received 13.2 mg ENS with and without nasal allergen challenge (NAC), 0.3 mg IM epinephrine by autoinjector, and 0.5 mg IM by manual syringe (MS).

**Results:** Administration of 13.2 mg ENS after NAC resulted in higher exposures and more rapid time to reach maximum concentration ($T_{max}$) versus 13.2 mg ENS without NAC and IM treatments. In Cohort 1, maximum observed epinephrine concentration ($C_{max}$, pg/mL) with 13.2 mg ENS with NAC, IM autoinjector, IM MS, or 13.2 mg ENS without NAC was 458.0, 279.0, 364.2, and 270.1, respectively, and in Cohort 2 was 436.3, 228.2, 322.3, and 250.8, respectively. In Cohort 1, $T_{max}$ for the respective groups was 15, 21, 45, and 25 minutes and in Cohort 2 was 18, 20, 45, and 20 minutes. The geometric mean ratio (90% CI) for $C_{max}$ with 13.2 mg ENS with NAC versus without NAC in Cohort 1 was 170% (123%-234%) and in Cohort 2 was 174% (115%-263%). Postdose heart rate and blood pressure remained stable and relatively similar to predose values regardless of plasma epinephrine concentration. Mild nausea and headache were the most common adverse events with 13.2 mg ENS.

**Conclusions:** 13.2 mg ENS with congestion demonstrated enhanced absorption versus IM treatments and 13.2 mg ENS without congestion and appeared well tolerated. Pharmacodynamic effects were minimal with no PK correlation.

**Funding:** Bryn Pharma.

S27

**Phase 2 OLE Two-Year Analysis of Donidalorsen Taken Every 4 Weeks or Every 8 Weeks in Patients with Hereditary Angioedema**

Kenneth B. Newman, M.D., Laura Bordone, Ph.D., Yiwen Deng, M.S., Veronica J. Alexander, Ph.D., Steve Dorow, Marc A. Riedl, M.D., Eugene Schneider, M.D, Danny M. Cohn, M.D., Ph.D.

**Introduction:** Hereditary angioedema (HAE) is a rare disease characterized by unpredictable, recurrent bouts of swelling that may be severe or fatal. Donidalorsen is an investigational antisense oligonucleotide designed to reduce plasma prekallikrein production via degradation of prekallikrein mRNA. We report results from the 2-year open-label extension (OLE) (ISIS 721744-CS3, NCT04307381) of a phase 2 randomized study with donidalorsen in patients with type I or type II HAE.

**Methods:** This interim analysis included fixed (weeks 1–13; donidalorsen 80 mg subcutaneously every 4 weeks [Q4W]) and flexible (weeks 17–105; donidalorsen 80 mg Q4W, 80 mg every 8 weeks [Q8W], or 100 mg Q4W) treatment periods. Patients could switch to 80 mg Q8W if they were HAE attack-free for ≥12 weeks after entering the OLE. Mean monthly attack rate and changes in quality of life were compared with baseline of the phase 2 randomized study (ISIS 721744-CS2, NCT04030598).

**Results:** Of 17 patients, 14 completed 2 years of treatment. Study drug-related treatment-emergent adverse events reported in >1 patient were injection site reaction and discoloration (n=2, 11.8%, each). Among all patients, HAE attack rate decreased by mean 96% (95% CI: −99.5 to −92.6; median: 99.1%) to mean 0.06 attacks per month (95% CI: 0.02–0.10; median: 0.04) from baseline. Eight patients switched to 80 mg Q8W dosing, of whom 5 remained attack-free after 2 years. Mean monthly HAE attack rate decreased by mean 83% (95% CI: −113.8 to −52.0; median: 100.0%) to mean 0.29 attacks per month (95% CI: −0.21 to 0.79; median: 0.00) from baseline in patients who switched to Q8W dosing. Mean total angioedema quality-of-life score improved in all patients by 27 points.

**Conclusions:** Data from the 2-year OLE demonstrated that donidalorsen was well tolerated and effectively reduced HAE attack rate in a sustained fashion. These results warrant further clinical investigation.

**Funding:** Ionis Pharmaceuticals.

S28

**Updated Results of a Phase 1a Trial of STAR-0215 for Hereditary Angioedema**

William Lumry, MD; Christopher Morabito, MD; Theodora Cohen, PhD; Michele Gunsior, PhD; Pamela Gustafson, MPH

**Introduction:** STAR-0215 is an investigational extended half-life monoclonal antibody for hereditary angioedema (HAE). This trial (NCT05477160) assesses STAR-0215's potential for safe and durable suppression of HAE attacks after single doses in healthy subjects.

**Methods:** This is a randomized, blinded, placebo-controlled, single ascending dose trial evaluating safety, tolerability, pharmacokinetics (PK), pharmacodynamics (PD), and immunogenicity of STAR-0215 after 100, 300, 600, and 1200 mg subcutaneously (SC) and 600 mg intravenously (IV) or matched placebo (3:1 randomization) in cohorts of healthy adult subjects followed for up to 224 days. PD is assessed by changes in cleaved high-molecular-weight-kininogen (cHMWK). This report includes complete results for all cohorts.

**Results:** 41 subjects received STAR-0215 (n=31) or placebo (n=10). Mild, related treatment emergent adverse events were seen in 68% (21/31) of STAR-0215 and 60% (6/10) of placebo subjects, most commonly injection site reactions. STAR-0215 demonstrated rapid absorption, dose-dependent concentrations, slow clearance, and mean t½ of up to 109 days. Median concentrations remained above 12 mcg/mL (potential efficacy threshold) for 84 days after ≥ 300 mg SC and above for 168 days after ≥ 600 mg SC. Suppression of cHMWK formation consistent with plasma kallikrein inhibition was achieved for up to 6 months. PK modeling confirmed a range of doses administered every 3-months or every 6-months may be effective in HAE attack prevention.

**Conclusions:** With favorable safety profile, long half-life, and durable PD, STAR-0215 demonstrates early proof of concept in healthy subjects as a potential HAE therapy with robust attack suppression and low treatment burden.

**Funding:** Astria Therapeutics

S29

**Avapritinib Led to Reductions in Symptom Burden and Polypharmacy in Patients With Indolent Systemic Mastocytosis (ISM)**

Mariana Castells, MD, PhD, Karin Hartmann, MD, Hanneke Oude Elberink, MD, PhD, Ilda Bidollari, MD, MBA, Cem Akin, MD, PhD

**Introduction:** ISM, a clonal mast cell disease driven by *KIT* D816V in ~95% of cases, can cause lifelong debilitating symptoms. Treatment with best supportive care (BSC) frequently involves polypharmacy, which can lead to adverse effects and may not address all symptoms. PIONEER (NCT03731260), a double-blind, randomized, placebo-controlled study, assessed safety and efficacy of avapritinib, a potent KIT D816V inhibitor, *versus* placebo, both with BSC. We report changes in symptom burden and polypharmacy following avapritinib in patients with ISM.

**Methods:** Patients with moderate to severe ISM (ISM-Symptom Assessment Form [ISM-SAF; ©2018 Blueprint Medicines Corporation] total symptom score [TSS] ≥28), despite BSC (including antihistamines, leukotriene inhibitors, cromolyn sodium, proton pump inhibitors, corticosteroids, and omalizumab), were randomized 2:1 avapritinib 25 mg once-daily (n=141) or placebo (n=71), both with BSC. Primary endpoints were mean change in ISM-SAF TSS (range 0–110) per patient-reported severity of 11 ISM symptoms (0=none; 10=worst imaginable) at 24 weeks, and long-term safety and efficacy. Secondary endpoints included change in ISM-SAF symptom domains and BSC usage.

**Results:** Avapritinib significantly improved TSS (–15.6 *vs* –9.2; *P*=0.003) *versus* placebo (both with BSC) at Week 24, maintained through Week 48. Symptom scores in all symptom domains (neurocognitive, gastrointestinal, and skin) improved on avapritinib at 24 and 48 weeks. At baseline, 60% of avapritinib-treated patients reported all 11 ISM-SAF symptoms *versus* 42% at Week 24 and 38% at Week 48. In avapritinib-treated patients, 21% decreased BSC usage after 24 weeks (3% discontinued BSC) *versus* 13% of placebo-treated patients (no discontinuations). After 48 weeks, 31% decreased (4% discontinued) BSC usage. Avapritinib and placebo had similar safety profiles; no new safety concerns emerged at median 18 months treatment duration.

**Conclusions:** Avapritinib showed continued improvements in overall symptoms/symptom domains over a longer treatment duration, was associated with polypharmacy reduction, and was generally well-tolerated with a median 18 months of therapy.

**Funding:** Blueprint Medicines Corporation.

S30

**C1 Esterase Inhibitor (C1-INH) Response as a Supportive Diagnostic Criterion for Patients With Suspected Hereditary Angioedema With Normal C1-INH**

Andrew M. Smith, MD; Henry J. Kanarek, MD; Jeffrey Rumbyrt, MD; Yusaf Hussain, DO; Lily M. Lim, MD; Shahnaz Fatteh, MD; Heidi Memmott, PharmD; Jay M. Kashkin, MD; Douglas H. Jones, MD

**Introduction:** Hereditary angioedema (HAE) with normal C1-INH level (HAE-nl-C1INH) diagnostic criteria include recurrent angioedema history; normal/near-normal levels of C4, C1-INH, and C1-INH function; and either an associated genetic variant or family history of recurrent angioedema plus lack of response with high-dose antihistamines. A rapid, durable response to a bradykinin-targeted medication is considered supportive.

**Methods:** A retrospective medical records review (6 centers) was conducted for angioedema or HAE codes to evaluate the diagnostic process for HAE-nl-C1INH in clinical practice.

**Results:** Thirty-one patients with HAE-nl-C1INH were identified, with the majority female (87.1%) and a mean age of 46.2 years (range, 16-74 years). All patients had experienced recurrent angioedema, with documentation of the ineffectiveness of antihistamine and/or mast cell–targeted therapies. Laboratory data (not during angioedema attacks) supported normal/near-normal levels of C4, C1-INH, and C1-INH function. Genetic testing was reported for 8 patients, with no known pathogenic genetic variants of HAE identified; 1 patient had a plasminogen gene mutation (associated with HAE-nl-C1INH). Diagnosis of HAE-nl-C1INH was confirmed in the 31 patients via a favorable response (symptom reduction/resolution within a few hours) after single-dose administration of intravenous rhC1-INH (weight-based dosing; maximum, 4200 U) during an angioedema attack. Subsequent inclusion of prophylaxis and/or on-demand treatment (eg, rhC1-INH) has reduced angioedema attack frequency/severity. Only 9 of 30 (30.0%) patients with documented information had been aware of a family history of recurrent angioedema/HAE. For 3 patients (10%), several family members were subsequently diagnosed/thought to have HAE-nl-C1INH after patient's diagnosis was established.

**Conclusions:** A family history of recurrent angioedema may not be apparent, and reliance on family history as a diagnostic criterion may delay accurate diagnosis and patient access to effective treatment. This case series supports that responsiveness to C1-INH replacement therapy (eg, rhC1-INH) may also be a useful supportive diagnostic criterion for HAE-nl-C1INH.

**Funding:** Pharming Healthcare, Inc.

S31

**Association Between Nickel and Propolis on Patch Testing**

Hannah E. Myers, BS, Edwine K. Coulanges, MS, Loretta S. Davis, MD, Victoria M. Madray, MD

**Introduction:** Patch testing is a diagnostic tool that assesses which allergen a person reacts to through controlled exposure and monitored reaction. Nickel is one of the most common allergens with approximately18.5% of patch tests positive for nickel. However, it is known to cross react with other allergens, which can interfere with diagnosis and treatment. For example, propolis, an allergen derived from beeswax, has reported cases of nickel contamination. This study aims to determine if those who react to nickel are also more likely to also react to propolis on patch testing due to the potential contamination.

**Methods:** A retrospective chart review was conducted with the following inclusion criteria: a dermatology patient, 18+ years of age, insurance codes CPT 95044 or Z01.82 for patch testing, and the encounter fell from December 1, 2000 to September 1, 2023. Patients were excluded if they did not meet the above inclusion criteria, if the patch test was placed or read incorrectly, or if nickel and propolis were not both tested. If there were multiple episodes of patch testing during this period, only the first instance was included.

**Results:** A total of 135 out of 170 cases were analyzed. Of the 135 analyzed, the average age was 51 with 68.1% female. A Chi Squared Analysis with a significance level of a= 0.05 was conducted and resulted in $X^2 = 0.812$, p-value = 0.3675.

**Conclusions:** While our data was not significant, we believe this might be secondary to a type II error. Our sample size of positive reactions was relatively small, with only 17 positive nickel and 9 positive propolis reactions total. Therefore, we plan to conduct a prospective study with concomitant propolis testing on metal-only patch tests to obtain a more robust sample size.

S32

**Unusual Culprit of Small Bowel Obstruction: A Case of Ace Inhibitor-Induced Intestinal Angioedema**

Debbie Aishwarya Sathya, Prabina Ghimire, Aleena Arshad, Hamid Yaqoob

**Introduction:** Incidence of Angiotensin-Converting Enzyme inhibitors (ACEi)-induced angioedema (ACEi-AE) is 0.1-0.7%. ACEi-AE involves the lips, tongue, face and uncommonly the airways. Although ACEi induced visceral angioedema is rare and occurs within 72 hours of therapy, very few cases have been reported after months of being on ACEi. We present one such rare case.

**Case report:** An 85-year-old female with a history of hypertension on Lisinopril for several years presented with abdominal pain, nausea, and vomiting for three days. On examination, abdomen was diffusely tender; imaging revealed small bowel obstruction (SBO) at the level of ileum with diffuse mural edema. She was managed conservatively for SBO.
A day later, she developed respiratory distress with stridor requiring intubation. No rashes were noted, and vitals were stable. During intubation, a boggy, edematous left arytenoid cartilage was noted. Suspecting angioedema involving the upper airways and small bowel, Lisinopril was discontinued and antihistamines with systemic steroids were started. Normal C4 and tryptase levels with elevated CRP and Antigenic C1 esterase ruled out hereditary angioedema (HAE). Over the next five days, she had no bowel movements and failed extubation. Given her ongoing symptoms despite discontinuing ACEi, two units of Fresh Frozen Plasma (FFP) were administered and extubated successfully. Her symptoms resolved, and repeat imaging showed interval resolution of SBO and absent bowel wall edema.

**Discussion:** ACEi-induced small bowel angioedema is a diagnosis of exclusion. The mainstay of ACEi-AE management is discontinuation of the inciting drug. HAE treatment options, including C1 esterase inhibitor concentrate, icatibant, and ecallantide, are being studied for ACEi-AE management. If unavailable, FFP appears to be effective for ACEi-AE management, as evident in our patient.

**Conclusion:** Our case demonstrates the importance of including ACEi-induced small bowel angioedema in the differentials for SBO. We conclude that FFP is a promising treatment option for this condition.

S33

**Retrospective Review of Sesame Oral Food Challenges at the University of Miami over the Past 10 Years**

Valishti Pundit MD; Jennifer Gebbia APRN; Gary Kleiner, MD PhD; Melissa Gans, MD

**Introduction:** Sesame became the 9th top food allergen in the US in January 2021. As of January 2023, US food and supplements require sesame labeling. This study adds insights into sesame allergy demographics.

**Methods:** Following local Institutional Review Board approval, a retrospective analysis was undertaken. Data from electronic medical records of individuals aged 0-22 who underwent nonblinded oral food challenges (OFCs) at the University of Miami from January 2013 to December 2023 were extracted. Among 297 total food challenges identified, sesame challenges comprised only 3% (n=9).

**Results:** The 9 challenges represented 7 total patients as 2 patients had repeat challenges. Patient #2 underwent 2 separate challenges 1 year apart and failed both times. Patient #3 underwent a first challenge during which he tolerated 20 sesame seeds and then a second challenge during which he failed to "a pea size of tahini." 8/9 challenges were with tahini, with a successful challenge requiring a cumulative dose of 1-2 tablespoons of tahini. The mean age of the participants was 32 months. Only one patient (1/7, 14%) identified as Hispanic White; all others identified as non-Hispanic White (6/7, 86%). 5 of 9 (56%) failed, with an equal sex distribution. The majority failed at a cumulative dose of ≤0.5 teaspoon tahini, except for one patient who failed at 2 teaspoons. No significant correlation was found between skin prick tests and total specific serum IgE levels with OFC outcomes. Of the four patients who had Ses i 1 component testing, those with specific IgE levels >1.23 IU/mL failed, and there was a correlation between how high the level was and the severity of reaction as Patient #3 with the highest level at 2.66 IU/mL required epinephrine and emergency room management. Those with Ses i1 < 0.38 IU/mL passed. There was no correlation between Ses i1 and the ability to tolerate sesame seeds as Patient #3 passed the 20-seed challenge. Among failed patients, 2/5 (40%) required in-office epinephrine administration, while 1/5 (20%) required emergency room treatment.

**Conclusions:** Families should be advised on the heightened allergic potency of tahini due to the absence of the protective sesame shell, compared to sesame seeds. Follow-up of sesame-allergic patients is crucial to determine potential resolution over time. Ses i1 testing may offer better predictability for oral graded challenge outcomes and reaction severity, necessitating further investigation. Allergists conducting such challenges must be ready for severe reactions, requiring prompt intervention and potential transfer to emergency care.

S34

**Early Clinical Improvement of Anosmia and Sinus Nitric Oxide in CRSwNP Subjects treated with Dupilumab**

Miguel J Lanz MD, Lianet Herrera Cespedes NP, Claudia P Eisenlohr MIB

**RATIONALE:** Patients with Chronic Rhinosinusitis with Nasal Polyps (CRSwNP) have a high morbidity of anosmia, yet there are few noninvasive biomarkers to measure treatment response. Nitric oxide is found in paranasal sinuses at 100x higher levels than the lungs and is vital for its antimicrobial/mucociliary activities and vasodilatory properties. Dupilumab has been shown to improve anosmia in two weeks by UPSIT, SNOT-22, and Loss of Smell (LoS) scoring.

**METHODS:** Adults with CRSwNP confirmed by CT or endoscopy were consented to receive Dupilumab 300mg, Q2 weeks, for 18 weeks. Subjects with polyposis despite treatment with steroids and/or history of sinus surgery were recruited. Measurements of sinus NO (sNO) from the nostril while humming, nasal NO (nNO) while breath holding, and FeNO while exhaling were collected at baseline and Q1,-2,-4,-8,-12,-16,-18 weeks. Olfactory impairment was measured by UPSIT, SNOT, and LoS at every visit.

**RESULTS:** Sixteen adults, 12 females, were enrolled having a mean age 43 years (23-53). Baseline mean sNO of 434ppb (203-665) significantly increased at Q2 weeks to 1150ppb (684-1616), *(*p<0.05)*. Significant improvements in scoring at baseline to Q2 weeks for UPSIT 28 to 31, SNOT 54 to 33, and LoS 2.3 to 1.5, and weak correlations of sNO with UPSIT (0.48) and SNOT (-0.49) were found. No significant changes in FeNO or nNO were found. Mean baseline blood eosinophil was 306 cells/uL and total IgE was 148 IU/mL. Baseline allergen sensitivity by skin testing and labs were found in 9 subjects, and 14 subjects had low pneumococcal antibody titers.

**CONCLUSIONS**: Our novel data reveals Sinus NO improvement with treatment response in anosmia as early as two weeks after the initial Dupilumab administration, similarly as other anosmia measures. This improvement in Sinus NO with anosmia improvement in CRSwNP is unique in the literature.

S35

**Unveiling Tracheal Stenosis: A Case Study of Misdiagnosed Asthma**

Ananna Kazi, DO, Sarah Shidid, MD & Denisa Ferastraoaru, MD

**Background:** Tracheal stenosis following intubation is a rare yet serious medical condition. Patients may remain asymptomatic for a variable duration and when they have symptoms, they are frequently misdiagnosed as having asthma.

**Case:** We present the case of a 58-year-old woman treated for refractory asthma for more than one year. Despite treatment, her condition worsened, necessitating hospital admission for severe exacerbation. During her stay, she exhibited minimal improvement despite systemic steroids. Physical exam revealed inspiratory stridor and a CT scan of neck and chest showed subglottic tracheal stenosis, prompting flexible bronchoscopy with balloon dilation. Two years prior, the patient underwent endotracheal intubation for shoulder surgery which likely resulted in tracheal stenosis. Post-balloon dilation, pulmonary function tests showed a normal flow volume loop and no signs of airflow obstruction. In the months following the intervention, the patient experienced significant improvement, being symptom-free and able to walk long distances without asthma-specific treatments. This marked a considerable improvement from her previous state, where walking even less than a block was hindered by dyspnea.

**Discussion:** This case highlights the importance of maintaining clinical suspicion and promptly diagnosing tracheal stenosis in individuals with a history of intubation, when presenting with asthma-like symptoms refractory to treatment.

S36

**Addressing Health Inequities: Understanding the Impact of Socioeconomic Factors on Acute Life-Threatening Asthma Exacerbations**

Christian Gomez Hernandez, MD; Wenchy Tan, MD; Sneha Bupathi, DO; Mary Lee-Wong, MD

**Introduction:** Asthma, a chronic respiratory ailment that impacts approximately 25 million individuals in the U.S. annually, is known to have varying prevalence across income brackets. This study aims to determine the extent to which such disparities contribute to in-hospital outcomes in patients admitted for acute asthma exacerbations.

**Methods:** This was a retrospective cohort study which utilized data from the national inpatient sample database to identify patients who were admitted for an acute asthma exacerbation between January 2017 and December 2019. Primary endpoint was requiring mechanical ventilation. Secondary outcomes included all-cause in-hospital mortality and length of stay (LOS). Weighted multivariable logistic regression and chi-square were used to analyze outcomes while controlling for Elixhauser- comorbidities, age, gender, and race/ethnicity.

**Results:** Sample included 58,312 patients admitted for an acute asthma exacerbation. Baseline characteristics revealed a mean age of 54 with 38,091 females. Compared to the lowest income quartile, the highest income quartile individuals are at lower odds of mechanical ventilation (OR: 0.76, 95% CI 0.56-0.99). When assessing insurance plans, Medicaid patients showed higher odds of mechanical ventilation than those with Medicare (OR 1.75, 95% CI 1.30-2.37). In terms of LOS, patients in the highest income quartile had shorter LOS compared to those in the lowest quartile ($p<0.001$), and similar trends were observed for Medicare patients relative to Medicaid recipients ($p=0.020$). There was no significant difference in all-cause mortality when accounting for income and insurance plan.

**Conclusions:** Social determinant of health variables affect inpatient outcomes of asthma hospitalizations. Our studied demonstrated that patients with lower income and Medicare insurance plans had higher rates of mechanical ventilation need and LOS, as compared to those in the highest income groups and Medicaid plans, respectively. Although no significant impact to all-cause mortality, further research is needed.

S37

**Dapsone-Induced Methemoglobinemia in Patient with Urticarial Vasculitis and Normal G6PD: A Case Report**

Natalia Tejada, M.D., Sonia Alicea, M.D., Andrew Cooke, M.D., Azin Azarfar, M.D.

**Introduction:** Urticarial vasculitis (UV) is a rare, mostly idiopathic, autoimmune disease that can signify a therapeutic challenge due to variable treatment response. We present a case of UV refractory to standard therapy and Omalizumab, which responded to Cyclosporine and Dapsone; however developed methemoglobinemia, an unexpected complication of Dapsone in the setting of normal levels of glucose-6-phosphate dehydrogenase (G6PD).

**Case Presentation:** A 45-year-old woman with history of allergic rhinitis and asthma presented with one month of persistent generalized urticaria, recurring sporadically since age 15. Despite treatment with prednisone, doxepin, cetirizine, famotidine, hydroxyzine, and Montelukast, symptoms persisted. Omalizumab was initiated, and a few weeks later she developed diffuse tingling, burning sensation of skin, worsening pruritus, painful hives, and bruising after significant sunlight exposure. A skin punch biopsy confirmed the diagnosis of UV. Omalizumab was stopped due to non-improving symptoms. Cyclosporine was initiated, and shortly after, Dapsone was added due to improved but persistent symptoms. Normal G6PD levels were confirmed prior to starting treatment. Three weeks later, urticaria had resolved, however she developed tachycardia, dyspnea, and oxygen saturations of 87-90%. She was immediately sent to the hospital where was found to have methemoglobinemia (methemoglobin level: 25.9%) which was successfully managed with oxygen therapy. Urticaria did not recur. Dapsone was discontinued and Cyclosporine was tapered off.

**Discussion:** Management of UV often requires a multidisciplinary approach. First line agents consist of antihistamines and nonsteroidal anti-inflammatory drugs, and most patients respond to glucocorticoids. Recent cases have shown high rates of success with Omalizumab, especially in refractory cases. Our patient failed these treatments while responded to Dapsone, which is often used when symptoms persist; however, developed a potentially life-threatening adverse effect that is uncommonly seen without G6PD deficiency. This case highlights the importance of vigilant monitoring and consideration of potential adverse effects of therapy, including rare complications.

S38

**Anaphylaxis to Soy Chicken: A Case Report**

Grace Golda Aharon, MD, Rebecca Grohman, DO, and Jenny Shliozberg, MD

**Background:** Soybean is classified as a "Big Nine" allergen, accounting for a significant proportion of food allergies in Europe and the United States. Yet the heterogeneity of soybean products makes it all the more difficult – and crucial – to accurately diagnose and classify allergy to soybean.

**Case Report:** We present the case of a 5-year-old male with a history of mild cutaneous reactions to soy-containing products, who developed anaphylaxis after ingesting chicken nuggets containing soybean. The child initially presented to allergy clinic complaining of facial rash after exposure to soybean powder. Skin prick testing (SPT) was positive for soy at 8mm. He was advised to schedule a food challenge in the office but was lost to follow up. He continued to tolerate products with small amounts of soy lecithin. One year after his initial presentation, this child presented to the emergency room in anaphylaxis after ingesting 9 chicken nuggets containing soybean. Laboratory investigation revealed serum specific IgE to soy > 100kU/L. Soy components also resulted with Gly m 5, notably a diagnostic marker for being at high risk of severe clinical symptoms to soy; as well as Gly m 6 >100kU/L (see Figure 1). Gly m 4 was undetectable. Gly m 8 was not included in the panel. The patient was diagnosed with soy allergy, advised to strictly avoid soy-containing products, and prescribed an epinephrine autoinjector.

**Conclusion:** This patient case raises the complexity of soybean allergy and represents the population of individuals who tolerate traces of soy but may have fatal reactions to hidden allergens. Possible future plans for this case include clarifying what products the child has tolerated and considering food challenge to low dose soybean and/or soy lecithin.

S39

**An Observational Study of Environmental Allergy Skin Prick Testing versus Serum Antigen-Specific Immunoglobulin E Testing on Asthma Control and Maintenance**

Jessica Sworzyn, MD, MS; Lillian Nwanah, MD, MBA; Kenny Kwong, MD

**Introduction**: Identification of sensitizing inhalants with subsequent mitigation is an integral part of treatment in children with asthma. While both skin prick (SPT) or serum specific IgE (sIgE) tests can be used for this purpose, it is unclear whether either test are associated with better asthma control.

**Methods**: Pediatric patients with the diagnosis of asthma who underwent either SPT (N=29) or sIgE (N=26) testing were identified in the electronic medical record of the Los Angeles General Medical Center Allergy and Immunology Clinic between January 2020 and December 2023. Inclusion criteria were (1) confirmed diagnosis of asthma as determined by ICD-9 and/or ICD-10 codes; (2) age 2 to 18 years old; (3) patients with documented SPT or sIgE test; (4) minimum of 4 or more clinic visits in the year following either SPT or sIgE test. We followed patients from the time of their initial test and compared the number of visits until asthma control. We then compared the asthma control (as defined by NHLBI-EPR3 criteria) and maintenance of control after one year since initially achieving asthma control. 2-tailed t-tests, chi-square testing, and statistical analyses were performed in Minitab. Statistical significance was accepted at a p-value of less than 0.05.

**Results**: The mean number of visits until asthma control is reached for patients with SPT was 1.48 versus 2.15 in patients with sIgE testing (p= 0.065). With asthma control maintenance, 86.21% of patients who underwent SPT were able to maintain control of their asthma after one year since initially achieving control versus 65.38% of patients who underwent sIgE testing (p= 0.0695).

**Conclusion**: There was no difference in regards to time to achieving asthma and maintaining asthma between asthmatic children who received SPT versus sIgE testing. Both tests may be used to detect allergic sensitization in management of children with asthma

S40

**Case Study: Rash Evaluation and Drug Allergy Management in A Transplant Patient**

Sarah Shidid, MD, Ananna Kazi, DO, Golda Hudes MD, PhD, Tamar Smith-Norowitz, PhD

**Background:** The purpose of this case is to demonstrate rash evaluation and drug allergy management in a solid organ transplant patient on high dose steroid regimen when the workup has been unremarkable. Misdiagnosis of drug allergy in transplant patients may result in less appropriate medication use.

**Case:** A 62 year old African American male, with advanced COPD leading to bilateral lung transplant, presented with an erythematous maculopapular rash two months post-transplant. He was previously placed on numerous medications including Mycophenolate(500 mg BID), Tacrolimus (2 mg BID), Acyclovir (400 mg BID), Sofosbuvir-Velpatasvir (400-100 mg daily), Voriconazole (200 mg BID), Bactrim (800-160 mg three times/week), and Prednisone (10 mg daily). His skin exam was significant for post inflammatory changes and excoriations on the back, chest, and hands. Dermatological findings showed a generalized flat, polymorphic violaceous papular rash with pinpoint crusting, but no pustules or drainage. Skin biopsy indicated purpuric interface dermatitis with eosinophils, which suggested a drug reaction.
Laboratory evaluation/workup was unrevealing, and included normal liver and kidney function, negative rheumatological work-up, negative serology for Hepatitis/ HIV titers, Chagas disease, Toxoplasmosis, Syphilis, Strongyloides, Q fever, RMSF, CMV, EBV, Aspergillus fumigatus and Mycobacteria.
Confirming the diagnosis as a drug reaction was equivocal because the patient was admitted for worsening respiratory status secondary to rhinovirus infection and placed on 30 mg prednisone tapering. Bactrim and voriconazole were discontinued, with slow resolution of rash.

**Discussion:** A potential drug allergy was not confirmed due to his steroid regimen and a cause was never identified. Future patch testing will be considered with suspected medications once the patient is on prednisone ( 5 -10 mg ) with subsequent oral drug challenge.

S41

**The association between classic IgE mediated food allergy and gluten sensitivity**

Ethan Lou, Thomas Wilson PhD, Nicholas Orfan MD

**Introduction:** Classic food allergy is mediated by the bonding of IgE antibodies to relevant food allergens. Gluten sensitivity with or without celiac disease, in contrast, is mediated by a non-humoral T-cell response to components of gluten. Previous studies have noted a significant association between severe food allergy and gluten sensitivity. In this study, we evaluated a possible association between classic food allergy and gluten sensitivity in a large all payers population.

**Methods:** This study is based on the Colorado all payers database ( 2017 to 2022). The patients were categorized by sex and age groups. Each patient in the data set has an ICD10 binary value to indicate whether he or she has gluten sensitivity and/or classic food allergy. We performed a statistical analysis using Python and its libraries (Pandas and SciPy) to assess the association between gluten sensitivity and classic food allergy. Results are reported in Odds Ratios (OR) and P values.

**Results:** Our study included 791,432 patients. Among them there were 367,727 (46.5%) males, and 423,705 (53.5%) females. We identified 2452 patients with classic food allergy and 931 patients with gluten sensitivity. They were categorized into 5 age groups: less than 18 years old (18.1%) , 18 to 29 (16.4%), 30 to 44 (24.8%), 45 to 64 (21.3%) and 65 and older (19.4%). In patients with food allergy, the risk of gluten sensitivity was significantly higher than in those without food allergy: OR 5.929 ($P < 0.0001$). For males: OR 4.452 ($P < 0.001$). For females: OR 6.891 ($P < 0.0001$). OR by age groups were as follows: OR 3.256 (<18, $P < 0.001$), OR 3.575 (18-30, $P< 0.001$), OR 18.481 (30-45, $P < 0.001$), OR 13.490 (45-65, $P < 0.001$) and OR 13.600 (>65, $P < 0.001$).

**Conclusion:** Our results indicate patients diagnosed with classic food allergy are at significantly increased risk for gluten sensitivity versus those without classic food allergy. We observed a somewhat stronger association among females than among males. Furthermore, the association was noticeably stronger in patients over age 30. Medical practitioners should have a low threshold for gluten sensitivity testing in patients with classic food allergy.

**A rare case of Semen allergy in an Adolescent**

Nikhil Chowdary Peddi*,MD.,Bhaktawar A Ali, MD., Tawana Winkfield-Royster, MD.

**Introduction:** There is an isolated allergy that can cause an acute systemic hypersensitivity reaction to semen. It is rare but may be life-threatening. We describe a case of an adolescent female who develops genital symptoms after unprotected sexual intercourse and exposure to semen in the absence of any other allergies.

**Case description**: A 19-year-old female with no past medical history presented to clinic for a well-child visit. She expressed a concern that she develops an itchy rash and swelling in the genital area whenever she has unprotected sex. She is sexually active with one male. She is asymptomatic when condoms are used. No moisturizes or fragrance oils are applied to their bodies prior to sexual intercourse. Given that symptoms only occur when she has unprotected sex, it is highly likely that she is allergic to semen. She was advised to use condoms.

**Discussion:** This very uncommon IgE mediated allergic reaction is often confused with chronic vulvovaginitis, especially in women older than 30 years. Symptoms can range from local vaginal symptoms such as pruritis, burning, and swelling to more systemic involvement with respiratory distress, wheezing, angioedema, abdominal pain with nausea, vomiting, diarrhea, hypotension, and syncope. More severe cases have resulted in anaphylaxis.

The allergic reaction is elicited via direct contact of Prostate-Specific-Antigen with the vulvovaginal area or via allo-allergens. Diagnosis is based on clinical presentation and a cutaneous prick test that tests for SP-typical and atypical allergens. Testing may not be indicated in cases that have symptoms resolve with condom use. Treatment involves preventing direct contact between seminal proteins and the vulvovaginal area via barrier protection or intravaginal graded desensitization if pregnancy is desired.