



# 34<sup>th</sup> Annual Meeting



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\*\*\*\*\* FISHER PRESENTATIONS \*\*\*\*\*

**Abstract Title: The Diagnostic Value of Delayed-Type Reactions to Aeroallergens for Atopic Disease**

**Authors and Affiliations:** Puneet Arora, University of Minnesota Medical School; Rebecca Freese, Biostatistical Design and Analysis Center, University of Minnesota; Paul Bigliardi, University of Minnesota

**Abstract**

**Objectives:**

Background/Introduction: Delayed-type reactions to aeroallergens have been observed, however their clinical significance continues to be debated. While prior studies have attempted to characterize the prevalence of these reactions via the atopy patch test (APT), few have done so in a large atopic population and no recent reports have established the significance of delayed reading of the intradermal skin test (IDT) in this context.

Objective: We assessed the prevalence and significance of delayed-type reactions to aeroallergens in atopic patients.

**Methods:**

Retrospective study including 266 patients with history or evidence of atopic disease (atopic dermatitis, allergic rhinitis, and/or allergic asthma) and tested via either the IDT or APT for common aeroallergens, specifically house dust mites (*Dermatophagoides farinae*, *Dermatophagoides pteronyssinus*) and perennial molds (*Aspergillus fumigatus*, *Penicillium notatum*). All patients were tested via IDT with both immediate (15 minute) and delayed (2 and 4 days) readings. Delayed reading was considered positive if the injection site demonstrated at least 5mm induration 48 hours after inoculation.

**Results:**

195 (73.3%) patients demonstrated an immediate-type reaction while 118 (44.4%) had a delayed-type reaction. 75 (28.2%) patients experienced both immediate and delayed-type reactions and 43 (16.2%) reacted delayed-type only. 85.3% of delayed-type reactions to individual aeroallergens were associated with eczematous lesions predominantly in air-exposed areas.

**Conclusions:**

Delayed-type reactions to aeroallergens are prevalent and clinically significant as a component of extrinsic AD and atopic diseases. The data supports delayed reading of the IDT to guide diagnosis and management in these patients. Further studies are needed to support these findings.

## **Abstract Title: Developing a Multispectral Camera to Improve the Accuracy of Remote Patch Testing**

**Authors and Affiliations:** Lisa Kiely, South Infirmary Victoria University Hospital; Aoife Hollywood, South Infirmary Victoria University Hospital; Michael McAuliffe, Centre for Advanced Photonics & Process Analysis; John Bourke, South Infirmary - Victoria Hospital

### **Abstract**

#### ***Objectives:***

Virtual patch testing with standard digital cameras is inferior to clinical assessment. Multispectral cameras target spectral bands in visible and non-visible spectral regions performing a more sophisticated analysis, assessing cutaneous blood flow in a clinical photograph acting as a surrogate for cutaneous inflammation. The aim is to assess the spectral response between 400 – 1000 nm of positive patch test reactions.

#### ***Methods:***

Clinical patch test assessment and digital photographs were taken at 72 hours. Results were determined to be positive, irritant or other. Spectra were recorded using an Ocean optics QE pro spectrometer and a Tungsten Halogen source both coupled with a bifurcated optical fiber. Spectra were recorded in triplicates of positive reactions, irritants and a control negative result. Reference spectra were also collected away from the patch test area as a control. Spectra were analysed using Principal Component Analysis and treated using a combination of different mathematical transformation. The results were then examined to determine the optimal wavelengths required for differentiating between positive, irritant and control results.

#### ***Results:***

Nine consecutive patients were recruited from September to November 2021. Spectra from 40 positive reactions, 2 Dyes and 1 irritant were recorded. Based on the spectra collected and analysed the optimum wavelengths were found between 510 nm and 620 nm. PCA results provides an indication of the severity of the reaction based on the clinical diagnosis.

#### ***Conclusions:***

There is a spectral difference between positive and negative results supporting the development of a multispectral camera that could support clinical diagnoses of virtual and remote patch testing.

**Abstract Title: Patient-Centered Communication Tools for the Patch Test Clinic**

**Authors and Affiliations:** Aheli Chattopadhyay, University of California San Francisco; Rubi Montejano, Cedars-Sinai Medical Center; Carina Woodruff, Epiphany Dermatology; Nina Botto, UCSF

**Abstract**

***Objectives:***

We aim to review best practices for communication with patients during patch testing visits. Patient-centered communication has been shown to positively impact the clinical encounter in numerous other specialties. Because the procedural components of patch testing often span the course of an entire week, effective communication with patients during patch testing visits is important for not only technical success, but also patient understanding and experience.

***Methods:***

We developed a narrative review of the literature using PubMed, where we synthesized evidence-based techniques to enhance relationship-centered care and patient communication in the patch test clinic. We additionally provided examples of their implementation in the patch test clinic.

***Results:***

In this review, we highlight the value of beginning the patch testing visit with clear introductions and agenda setting, improving patient understanding of patch testing and engagement through methods such as teach-backs and cycles of questions and answers that create patient-provider dialogue, and using communication techniques to make expressions of empathy for these patients, who are often frustrated with their skin disease.

***Conclusions:***

There are many opportunities for bolstering communication before and throughout the patch testing experience. By strategically employing a variety of techniques to improve communication and subsequent understanding in the patch test setting, we may enhance not only the provider-patient relationship but also patient experience, outcomes, and quality of life.

***Acknowledgements:***

We thank Leilani Reed for her contributions to our work on best practices for communication in patch testing. We also thank the UCSF Department of Dermatology.

**Abstract Title: Metal Allergy Testing in Patients Listed for Temporomandibular Joint Replacement at Massachusetts General Hospital**

**Authors and Affiliations:** Hadley Johnson, Briana Burris, Massachusetts General Hospital; Joseph McCain, Massachusetts General Hospital; JiaDe Yu, Massachusetts General Hospital

**Abstract**

***Objectives:***

Patients with temporomandibular joint (TMJ) arthropathies (i.e end-stage degeneration, invasive pathology, or developmental anomalies) may be candidates for total joint replacement (TJR). Metal allergy testing is conducted beforehand to guide the choice of prosthesis. Our aim was to determine the agreeability between the lymphocyte transformation test (LTT) and skin patch test (SPT) for detection of metal allergy.

***Methods:***

Retrospective analysis of patients who presented to Massachusetts General Hospital with TMJ arthropathies requiring TJR and were referred for LTT and SPT, from 2018-2022

***Results:***

Of the 30 patients included, the mean age was 44.8 years. 86.7% were female and 93.3% self-identified as White. Of the fourteen patients who completed both the LTT and SPT, 21.4% self-reported a history of metal allergy, while 50% self-reported a history of jewelry allergy. The results of LTT and SPT were discordant with regards to aluminum, cobalt, chromium, molybdenum, zirconium, or iron. 41.7% of patients who tested positive for nickel at any concentration on LTT also tested positive for nickel on SPT. 100.0% of patients who tested positive for vanadium at any concentration on LTT also tested positive for vanadium on SPT. The sensitivity and specificity of LTT were 46.2% and 83.8%, respectively.

***Conclusions:***

In patients planned for TMJ TJR, there is the most agreement between LTT and SPT on vanadium allergy, followed by nickel allergy. There is no agreement on other metal allergies. When compared to SPT, LTT has a low sensitivity and high specificity.



## **Abstract Title: Is In-Person Day 2 Patch Testing Necessary?**

**Authors and Affiliations:** Christen Samaan, Penn State Milton S. Hershey Medical Center; Alexandra Flamm, Penn State Hershey Medical Center; Mikael Horissian, Penn State Milton S. Hershey Medical Center; Colleen Silva, Penn State Milton S. Hershey Medical Center; Bryan Anderson, Penn State University; Tierney Wallace, Penn State Milton S. Hershey Medical Center; Amy Longenecker, Penn State Milton S. Hershey Medical Center; Laurie Dove, Penn State Milton S. Hershey Medical Center; James Marks, Penn State Hershey Med Center

## **Abstract**

### ***Objectives:***

Studies assessing the utility of in-person day 2 (D2) patch testing have been lacking. This proof-of-concept study aims to demonstrate whether D2 photograph reading is non-inferior to in person visit.

### ***Methods:***

Patients undergoing patch testing are invited to participate in this study. Participants are randomized into one of the following three cohorts for D2 visit: patch removal by nurse and read by physician, patch removal and photograph taken by nurse for review by physician at final visit, or at home patch removal and photograph taken by participant to be reviewed by physician at final visit. Participants and providers complete a questionnaire at the final visit. Noninferiority was analyzed using a margin of 5%.

### ***Results:***

Thirty-one patients completed the study. Preliminary data of percent allergic contact dermatitis diagnosis in cohort 1, 2, and 3 is 58%, 60%, and 78%, respectively. Cohort 2 and 3 did not meet the prespecified criterion for noninferiority when compared to the control cohort ( $p$ -value = 0.4369 and 0.7584, respectively). An ANOVA analysis showed no difference in mean satisfaction or mean confidence level across all cohorts. 100% of the photos were considered to have adequate lighting with all sites visible.

### ***Conclusions:***

The preliminary results do not support eliminating D2 in person visit. The analysis is based on a conservative approach to noninferiority metrics and small sample size. The proof-of-concept study did show that there's no difference in mean satisfaction between cohorts. Importantly, the providers are able to adequately assess the photographs with no impact on final diagnosis in cohort 2 and 3.

### ***Acknowledgements:***

Supported by the American Contact Dermatitis Society.

**Abstract Title: Occupational Wet Exposure, Absenteeism and Presenteeism in Individuals With Hand Eczema: Data From the Dutch General Population**

**Authors and Affiliations:** Marjolein Brands, University Medical Center Groningen, The Netherlands; Laura Loman, University Medical Center Groningen; Marie-Louise Schuttelaar, University Medical Center Groningen, Groningen, The Netherlands

**Abstract**

**Objectives:**

Hand eczema (HE) is the most frequently occurring occupational skin disease. Its association with exposure and work outcomes requires further investigation.

Objective: To assess the association between HE and occupational wet exposure, absenteeism and presenteeism in the Dutch general population.

**Methods:**

Within the Lifelines Cohort Study, participants with HE were identified by a digital questionnaire sent out in 2020, including questions regarding absenteeism and presenteeism due to HE, wet exposure and disease-specific characteristics. Data on profession and socioeconomic factors were collected from baseline (2006 to 2013). Additionally, a job exposure matrix (JEM) was used to estimate the likelihood of occupational wet exposure lasting =2 hours/day. Associations between HE and occupational wet exposure, and between presenteeism and disease-specific and socioeconomic factors were described using logistic regression analyses, adjusted for age and sex.

**Results:**

Overall, 57.046 participants (42.0%) were included. Using the JEM, a dose-dependent association between HE and wet exposure was found in females (odds ratios of 1.21 [95% confidence interval (95%CI):1.04-1.40] and 1.28 [95%CI: 1.04-1.56] for a probability of >75% for having wet hands or wearing gloves =2 hours/day, respectively). No association was found in males. Absenteeism was reported by 0.6% and presenteeism by 2.7%. Presenteeism was associated with more severe and chronic HE, atopic dermatitis, occupational wet exposure, lower income and fewer years of education and working hours.

**Conclusions:**

A JEM might provide additional information on exposure in epidemiologic studies on HE. Especially in patients with severe HE and occupational exposure, the risk of presenteeism should be considered.

## **Abstract Title: Testing for Undeclared Isothiazolinones in Lens Cleaning Wipes and Sprays**

**Authors and Affiliations:** Nicholas Battis, Park Nicollet Health System; Samuel Ekstein, Park Nicollet Health Services; Sara Hylwa, Hennepin Healthcare and HealthPartners Institute

### **Abstract**

#### ***Objectives:***

Methylisothiazolinone (MI) has been recognized as one of the most prevalent preservatives causing allergic contact dermatitis (ACD) over the past decade. Though manufacturers are required to declare its presence in products intended to touch the skin, its use is frequently undeclared in cleaning solutions or other products with which patients may come into contact. We aimed to assess the presence of MI in lens cleaning wipes and sprays.

#### ***Methods:***

MI testing was performed on 7 common lens cleaning spray and 7 lens wipes using the Lovibond® Isothiazolinone Colour Card Kit (56K00141) for a total of 14 sample solutions. All isothiazolinone testing was performed per protocol listed in the manufacturer's instructions.

#### ***Results:***

5 of 7 (71.4%) lens cleaning sprays tested were found to be positive for isothiazolinones. 7 of 7 (100%) wipes tested were found to be positive for isothiazolinones. A total of 12 of 14 (85.7%) lens cleaning products contained isothiazolinones. The strongest positive reaction was for Up & Up brand spray equating to between 4.5-7.5 ppm per the test kit color card. Of the products that tested positive, only 2 sprays (28.6%) and 1 wipe (14.3%) declared MI.

#### ***Conclusions:***

Isothiazolinones were found in a majority of lens cleaning products - even those that list ingredients not including MI. These products are an important consideration for patients allergic to MI and also those presenting with facial rash and MI allergy who wear glasses, especially if other products do not explain their dermatitis.

**Abstract Title: Cutaneous Findings in Patients With Diabetes Wearing Continuous Glucose Monitors: An Epidemiologic Analysis**

**Authors and Affiliations:** Emilee Herringshaw, UMass Chan Medical School; Cheryl Barry, UMass Memorial Health; Samir Malkani, University of Massachusetts Medical School; David Harlan, University of Massachusetts Medical School; Wei-Che Ko, University of Massachusetts Medical School

**Abstract**

**Objectives:**

Our goal is to develop a patient centered, standardized tool to evaluate cutaneous reactions to continuous glucose monitors (CGMs) for patients with diabetes. We seek to analyze epidemiologic patterns of CGM reactions and to identify devices suspicious for eliciting contact dermatitis.

**Methods:**

A survey was made available to patients with diabetes at UMASS and offered at 6 month intervals. Severity ratings were completed on a linear scale of 1 to 5, which ranged from “not at all,” to “extremely severe.”

**Results:**

Nearly half (13/24) of patients who completed the survey reported reactions to CGMs (54.2%). Reactions occurred with all devices (75% (3/4) Freestyle, 66.7% (8/12) Dexcom G6, 66.7% (2/3) Guardian). While the sample size is currently limited, patients using Dexcom reported reactions of greater severity (2.86+/- 1.07) than patients using Freestyle (1.66+/- 0.58) or Guardian (2+/- 0) models. Of patients who experienced reactions, 46.2% (6/13) attempted an intervention and of those; 20% (1/5) reported it completely worked, 40% (2/5) reported it worked somewhat and 40% (2/5) reported it worked a little. Of patients who reported reactions in various locations, 33.3% (1/3) reported severity varied by location. About half (6/13) of patients reporting reactions used other CGMs previously; 50% (3/6) did not have a reaction to their previous CGM.

**Conclusions:**

Patients are experiencing reactions to CGM devices with limited ability to manage the reaction. With this simple survey tool, we can characterize these reactions and identify CGMs associated with contact dermatitis to benefit the dermatologic and diabetes care of patients.

## **Abstract Title: Contact Allergens in Polyvinyl Chloride Medical Examination Gloves in the United States**

**Authors and Affiliations:** Thomas Norman, University of Southern California; Jana Guenther, University of Southern California; Isaac Asante, University of Southern California; Brandon Adler, University of Southern California

### **Abstract**

#### ***Objectives:***

Although polyvinyl chloride (PVC) gloves are recommended as a safe alternative in patients with rubber accelerator allergy, allergic contact dermatitis (ACD) to various non-rubber chemicals in PVC has been reported, primarily outside the US. We analyzed the largest sample to date of PVC gloves in the US for the presence of previously reported allergens.

#### ***Methods:***

We selected 20 unique PVC gloves commercially available in the US. Using liquid chromatography-mass spectrometry, each glove was analyzed in triplicate for the presence of 6 chemicals previously reported to cause PVC glove-associated ACD: bisphenol A, benzisothiazolinone, monoethyl maleate, tricresyl phosphate, triphenyl phosphate, and triphenyl phosphite. Glove safety data sheets (SDS) were reviewed for detected chemicals.

#### ***Results:***

The 6 tested chemicals were present in every glove. For every gram of glove sampled, concentrations varied from 11.69-114.14 ng for bisphenol A, 1.08-1,476.22 ng for benzisothiazolinone, 1.00-144.47 ng for monoethyl maleate, 1.00-2.26 ng for tricresyl phosphate, 7.93-2,110.65 ng for triphenyl phosphate, and 1.10-221.84 ng for triphenyl phosphite. No SDS listed any of these chemicals. A major limitation is clinical relevance of these detected levels could not be determined.

#### ***Conclusions:***

The presence of known allergens in all 20 gloves suggests that PVC gloves might have a higher potential for inducing ACD than generally thought, but the relationship between detected levels and elicitation/sensitization thresholds remains to be studied. Most of these allergens are not tested on baseline patch test series and there is a lack of transparency regarding ingredients, potentially contributing to underdiagnosis of ACD to PVC gloves.

#### ***Acknowledgements:***

Funding was provided by the American Contact Dermatitis Society Clinical Research Award.

## **Abstract Title: Trends in Contact Dermatitis due to Cosmetics: A Retrospective Analysis**

**Authors and Affiliations:** Jill Stachowski, Penn State College of Medicine; Alexandra Flamm, Penn State Hershey Medical Center; James Marks, Penn State Hershey Med Center; Steven Maczuga, Penn State Hershey Med Center

### **Abstract**

#### ***Objectives:***

Studies of contact dermatitis (CD) due to cosmetics have indicated that females and workers within the cosmetics industry, such as beauticians and nail estheticians, are the most susceptible populations to developing the condition. Given changing trends within the cosmetics industry, it is possible that these most susceptible populations are changing.

Our objective was to analyze the trends of cosmetic CD over the last 15 years (2005-2019)

#### ***Methods:***

A retrospective database analysis was completed with the Truven MarketScan database. The International Classification of Diseases (ICD), 9th and 10th Revisions, were used to gather diagnostic information on patients with a CD due to cosmetics diagnosis.

#### ***Results:***

A total of 72,079 patients were identified. Diagnoses of cosmetic CD within the database significantly increased with the change in the ICD coding system between the 9th (0.00084%) and 10th (0.0023%) revisions ( $p < 0.001$ ). The annual number of females diagnosed with CD due to cosmetics over the time period, 2005-2019, increased more steeply ( $p < 0.001$ ) than the annual number of males diagnosed with CD due to cosmetics over the same time period ( $p < 0.001$ ). In looking at the age breakdown, the most interesting was that of females aged 0-17: the annual percentage of diagnoses increased ( $p = 0.003$ ) over time compared to males of the same age group, which decreased over time ( $p < 0.001$ ).

#### ***Conclusions:***

Cosmetic CD diagnoses are increasing, particularly in younger females. The changes from ICD-9 to ICD-10 may have allowed for increased specificity to identify CD due to cosmetic products.

#### ***Acknowledgements:***

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**Abstract Title: Reevaluating Copositivity Patterns in Standard Series Patch Testing Through Hierarchical Clustering**

**Authors and Affiliations:** Yul Yang, Mayo Clinic; James Yiannias, Mayo Clinic Scottsdale; Molly Voss, Mayo Clinic; Molly Klanderma, Mayo Clinic; Aaron Mangold, Mayo Clinic

**Abstract**

**Objectives:**

Patients are frequently copositive to multiple allergens simultaneously, either due to chemical similarity or simultaneous sensitization. Here, we examined series-wide copositivity patterns in the 80 allergen Mayo Clinic Standard Series.

**Methods:**

The Mayo Clinic patch test database was queried for pairwise copositivity rates in the Mayo Clinic Standard Series between 2012 and 2021, including 9,545 positive reactions of 394,921 total patches applied to 5,943 patients. After background correction, copositivity rates were organized through unsupervised hierarchical clustering to determine copositivity patterns.

**Results:**

Without background correction, individual allergen average copositivity rates to all other tested allergens ranged from 0.5% to 26.5%. Allergens with overall high positivity rates (eg. methylisothiazolinone, myroxylon pereirae, nickel) showed generally very high copositivity rates to multiple other allergens. After background correction based on overall positivity rates, clustering revealed distinct copositivity groups. Many were supported by prior literature, including Compositae-sesquiterpene lactone mix, mercapto mix-mercaptobenzothiazole, budesonide-hydrocortisone-17-butyrate, acrylates, 3-dimethylaminopropylamine-amidoamine-oleamidopropyl dimethylamine, cobalt-nickel-potassium dichromate, carba mix-thiuram mix, fragrances, disperse orange-p-phenylenediamine, alkyl glucosides, and formaldehydes. However, novel associations were also found, including glutaraldehyde-sorbitan sesquioleate, benzoic acid-iodopropynyl butylcarbamate, bronopol-methylchloroisothiazolinone-methylisothiazolinone, and benzalkonium chloride-neomycin-bacitracin.

**Conclusions:**

Copositivity rates vary between allergens. Allergens with extremely high positivity rates demonstrate nonspecific copositivity to multiple other allergens. Background correction based on positivity rates, followed by hierarchical clustering confirms prior known copositivity groups, contaminants leading to copositivity, and novel associations.

**Acknowledgements:**

This research was made possible through the support of the Kathryn H. and Roger Penske Career Development Award to Support Medical Research at Mayo Clinic Arizona (YWY).

## **Abstract Title: Dupilumab in Patients With Severe Hand Eczema: A Proof-of-Concept Study**

**Authors and Affiliations:** Marie-Louise Schuttelaar, University Medical Center Groningen, Groningen, The Netherlands; Angelique Voorberg, University Medical Center Groningen, Groningen, The Netherlands; Esme Kamphuis, University Medical Center Groningen; Wietske Christoffers, Isala Dermatologic Center, Zwolle, The Netherlands

### **Abstract**

#### **Objectives:**

Effective treatment options for patients with chronic hand eczema (CHE) are scarce.

#### **Methods:**

In this 16-weeks, randomized, double-blind, placebo-controlled phase IIb trial, patients with severe CHE were randomized 2:1 to dupilumab 300mg or placebo subcutaneously every two weeks. The primary end point was the proportion of patients achieving at least 75% improvement on the Hand Eczema Severity Index (HECSI-75) at week 16.

#### **Results:**

In total, 30 patients were randomized, and 29 patients received the assigned study drug (dupilumab N = 20, placebo N = 9). At week 16, more patients achieved HECSI-75 in the dupilumab group than the placebo group (95.0% [95% confidence interval (CI), 85.0%-100.0%] versus 33.3% [95% CI, 2.5%-64.1%],  $P < .001$ ). Dupilumab also showed statistically significantly greater least square mean percentage change improvement from baseline to week 16 in peak pruritus numerical rating scale than placebo ( $-66.5 \pm 10.7$  versus  $-25.3 \pm 17.0$ ,  $P = 0.049$ ). Adverse events were similar in dupilumab and placebo groups and mostly of mild severity.

#### **Conclusions:**

Dupilumab showed superiority over placebo and was well tolerated by patients with severe CHE in this proof-of-concept phase IIb trial. Larger studies of longer duration are needed to provide more evidence on the efficacy of dupilumab on CHE. Moreover, larger studies could also enable comparisons between CHE subtypes or etiological diagnoses, for example irritant contact dermatitis or a history of atopic dermatitis.



## **Abstract Title: Nickel Release From Hairdressing Tools in the United States**

**Authors and Affiliations:** Cynthia Chan, Montefiore/Einstein; Carsten Hamann, Saguaro Dermatology

### **Abstract**

#### ***Objectives:***

Hairdressers have a high prevalence of contact dermatitis, especially to nickel. The presence of nickel in hairdressing tools has been evaluated in Europe, where the government limits nickel release levels from objects. We present the first reported similar investigation in eastern and western America.

#### ***Methods:***

Hairdressers and individuals with hairdressing tools were invited to participate. Metallic parts of each tool were tested with dimethylglyoxime (DMG), which detects nickel release. Data on tool cost were recorded when available.

#### ***Results:***

89 tools from 9 salons and 2 over-the-counter sets were tested. 24 (27%) tested positive: trimmers (100%), curling irons (100%), clippers (50%), hair clips (36%), texturizing shears (26%), and trimming shears (4%). Nickel was detected in both salon and over-the-counter tools, and rural and urban salons. Nickel-releasing tools were cheaper than DMG-negative tools of the same type.

#### ***Conclusions:***

Our findings help explain the high prevalence of contact dermatitis among hairdressers, alert clinicians to consider occult occupational allergens when assessing patients with allergic contact dermatitis, reinforces the importance of using barrier protection including gloves when handling hairdressing tools including at home, and augments impetus for more legislation regulating common allergens. Study limitations include the DMG test's qualitative nature and 60% sensitivity, potentially underestimating the prevalence of nickel among the tested tools. Nickel release was not tested in tools wet with hairdressing solutions, which may lead to further underestimation. Self-reported cost data for tools has limited internal validity. Regional differences in supply chain limit external validity.

## **Abstract Title: North American Contact Dermatitis Group Patch Test Results: 2019 - 2020**

**Authors and Affiliations:** Joel DeKoven, University of Toronto-Sunnybrook; Erin Warshaw; Margo Reeder, UW School of Medicine & Public Health; Amber Atwater, Eli Lilly and Company; Jonathan Silverberg, The George Washington University School of Medicine and Health Sciences; Donald Belsito, Columbia University Irving Medical Center; Denis Sasseville, Montreal General Hospital; Kathryn Zug, Geisel School of Medicine at Dartmouth; James Taylor, Dermatology Plastic Surgery Institute, Cleveland Clinic; Melanie Pratt, University of Ottawa; Howard Maibach, Univ of California Hospital; Joseph Fowler, DS Research; Brandon Adler, University of Southern California; Marie-Claude Houle, Laval University; Christen Mowad, Geisinger Medical Center; Nina Botto, UCSF; JiaDe Yu, Massachusetts General Hospital; Cory Dunnick, Colorado Skin Surgery & Dermatology

### **Abstract**

#### ***Objectives:***

This study documents the North American Contact Dermatitis Group (NACDG) patch testing results from January 1, 2019, to December 31, 2020.

#### ***Methods:***

At 13 centers in North America, patients were tested in a standardized manner with a screening series of 80 allergens and as clinically indicated, supplemental allergens. Data were entered into a central database. Descriptive statistics were estimated, and trends were analyzed using Chi-squared [  $\chi^2$  ] test.

#### ***Results:***

Overall, 4121 patients tested were tested; 2871 (69.7%) had at least one positive/allergic patch test reaction and 2095 patients (51.2%) had a primary diagnosis of allergic contact dermatitis. The most commonly positive allergens were nickel [18.2%], methylisothiazolinone (MI)[13.8%], fragrance mix I (FM1)[12.8%], hydroperoxides of linalool (HPL)[11.1%] and benzisothiazolinone (BIT)[10.4%]. Compared with 2017-2018, prevalence of top 20 allergens statistically increased for FM 1, HPL, BIT, propolis and hydroperoxides of limonene [3.5%]. For the first time, MI positivity did not increase between reporting periods. The screening allergens with the highest frequency of current relevance were MI (90.3%), FM1 (87%), and HPL (89.2%). Approximately one-fifth of patients (20.3%) had = 1 clinically relevant reaction(s) to allergens/substances not on the NACDG series.

#### ***Conclusions:***

The epidemic of methylisothiazolinone contact allergy in North America may have reached a plateau. Patch test positivity to Hydroperoxides of linalool significantly increased, though the reasons for this remain unclear. Patch testing with allergens beyond a screening series is necessary for comprehensive evaluation of occupational and non-occupational allergic contact dermatitis.

\*\*\*\*\* POSTER PRESENTATIONS \*\*\*\*\*

**Abstract Title: AllergEAZE vs Dormer Laboratories, Inc. Propolis Positivity Rate: Experience From a Single Center**

**Authors and Affiliations:** Amy Ducharme, University of Montreal; Catherine Besner Morin, University of Montreal

**Abstract**

**Objectives:**

Propolis hypersensitivity has been increasing recently. The exact composition of this natural substance varies depending on the geolocation and therefore can affect its allergenic potential. We aimed to report our experience of positivity rates to propolis between the two pharmaceutical companies available in our center: allergEAZE and Dormer Laboratories Inc.

**Methods:**

We consecutively patch tested 155 patients who were undergoing routine patch testing (PT) at our center from April 2021 to October 2021 with propolis from both companies. Readings were performed at 96 hours. Reactions = 1+ were considered positive.

**Results:**

Of all patients tested, 12 patients (7.7%) showed positive reactions. All positive PT were from allergEAZE (100%) vs none from Dormer (0%). 21 patients (13.5%) showed a doubtful reaction to propolis: almost all of them were caused by allergEAZE (20/21) vs only one by Dormer (1/21). Relevance was found only in a minority (3/21). Among propolis-positive patient (= 1+), 50% were found to have either probable or possible clinical relevance.

**Conclusions:**

We found a noticeable higher percentage of positive reactions with allergEAZE PT compared to Dormer PT in the same cohort. One of the explanations could be that allergEAZE propolis is sourced in North America and our center is in Canada, hence their propolis being more similar to the actual composition of the sensitising propolis. Most doubtful reactions had no or indeterminate relevance. Thus, we suspect an irritant reaction more than a true allergic reaction. Interpreting all doubtful reaction of an allergic nature could lead to an over diagnosis of propolis hypersensitization.

**Abstract Title: Recurrent Allergic Contact Dermatitis to Bacitracin Used in Pocket Irrigation During Breast Reconstruction Surgery**

**Authors and Affiliations:** Harry Chaocheng Liu, Department of Dermatology and Skin Science, University of British Columbia; Gillian de Gannes, University of British Columbia

**Abstract**

**Background:**

Medical products used during plastic surgeries are possible allergens that can cause allergic contact dermatitis (ACD), including topical antibiotics, antiseptics, bandages, and tissue adhesives, therefore plastic surgeons may encounter surgery related ACD as a postoperative complication.

**Conclusions:**

Clinicians should be aware that bacitracin-containing antibiotic solution is a popular agent among plastic surgeons for antimicrobial breast pocket irrigation and implant soaking. ACD to bacitracin should be considered in any patient who develops a dermatitis soon after having bacitracin for pocket irrigation and implant soaking in breast surgeries.

**Abstract Title: Development of Granulomatous Allergic Contact Dermatitis to Hantavirus DNA Gold Particle Vaccine 14 Years After Administration**

**Authors and Affiliations:** Kate Beekman, USF Health Morsani College of Medicine; Thomas Beachkofsky, James A. Haley Veterans' Hospital, Dermatology Section; Eugene Sanik, James A. Haley Veterans' Hospital, Dermatology Section; Adam Bennett, James A. Haley Veterans' Hospital

**Abstract**

**Background:**

Vaccine technology diversification is accelerating, often outpacing research on immunologic sequelae. We report a delayed granulomatous allergic contact dermatitis to the gold particle substrate of an experimental hantavirus vaccine presenting after 14 years, treated with intralesional triamcinolone.

**Conclusions:**

The 14-year period of quiescence suggests a discrete trigger, for example exposure to wild-type hantavirus with subsequent adaptive immune response to the gold-borne vaccine antigens and epitope-spreading to the gold substrate via a hapten-carrier phenomenon. While both late and granulomatous reactions to gold have been described, a 14-year delay has not previously been reported and suggests that a second antigen may be required to prime a gold-specific cellular immune response in at least a subset of gold-allergic patients.

## **Abstract Title: Allergen Content of Natural Skin Care Products - How Safe is Natural?**

**Authors and Affiliations:** Haiwen Gui, Stanford University; Peter Young, Department of Dermatology, The Permanente Medical Group, Sacramento, California; Gordon Bae, Stanford Health Care

### **Abstract**

#### ***Objectives:***

The prevalence of personal care product (PCP)-related dermatitis has increased 2.7-fold between 1996-2016. [1] Largely unregulated, "natural" alternatives have been increasingly marketed to health-conscious consumers. Contact dermatitis is preventable by avoiding causative substances, but little is known about the allergenicity of natural PCPs (NPCPs). [2] We therefore sought to determine the allergenic potential of NPCPs.

#### ***Methods:***

We evaluated 1651 NPCPs from 3 national US retailers (Target.com, Walgreens.com, and WholeFoodsMarket.com) to determine the presence of allergens (defined as a contact sensitizer in ACDS's Contact Allergen Management Program). Clinical prevalence for identified allergens was determined by referencing the 100 allergens that most frequently elicit positive reactions using ACDS patch tests (Table 1). [3] Presence of fragrance in products was compared with product popularity (according to retailer websites), to evaluate a possible association (Figure 1).

#### ***Results:***

94.2% of NPCPs (N=1555) had at least 1 contact allergen, 89.5% (N=1478) contained 1 or more of the top-100 most clinically prevalent contact allergens, and 5.8% (N=96) had no contact allergens (Table 2). There were 73 unique allergens identified, with fragrance appearing in 36.6% of products (N=605). More popular products tended to contain fragrance (Figure 1). The number of allergens differed significantly between national retailers (ANOVA p-value < 0.001) (Figure 2).

#### ***Conclusions:***

Advertising claims that products are "natural" do not indicate low risk of containing allergens including fragrance. Clinicians and patients should be aware of these findings. Limitations include the inability to compare allergen prevalence in NPCPs versus ordinary PCPs, due to retailer marketing strategies.

**Abstract Title: Contact Dermatitis Associated With Hindu Religious Practices: Review of the Literature**

**Authors and Affiliations:** Aamir Hussain, MedStar Washington Hospital Center/Georgetown University; Rayva Khanna, MedStar Washington Hospital Center; Alan Moshell, Georgetown University/Medstar Medical Group

**Abstract**

***Objectives:***

Contact dermatitis may occur secondary to devotional practices in various religions. This abstract summarizes contact dermatitis reactions including allergic contact dermatitis (ACD) and chemical leukoderma occurring as a result of Hindu religious and cultural practices.

Objectives: To provide an overview of religious practices that may cause ACD, and suggest management strategies that mitigate dermatitis while respecting cultural sensitivities.

***Methods:***

A systematic review of PubMed was conducted from inception of database to June 13, 2022. Key terms were “contact dermatitis” or “devotional dermatosis” in association with “Hinduism.” Inclusion criteria were determined by presence of a Hindu religious practice and secondary dermatological reaction.

***Results:***

16 of 28 unique articles identified met inclusion criteria. The most common religious practice associated with allergic contact dermatitis overall was Henna tattoos, found in Hinduism. The most common implicated allergens were para-phenylenediamine and diaminobenzidines found in blackening ingredients of Henna. Other notable allergens included: Kumkum, a turmeric-based powder, as well as para-tertiary butylphenol in bindi forehead adhesives (Hinduism). Turmeric was seen to cause pigmented contact dermatitis, whereas bhindis (para tertiary butyphenol) were noted to cause chemical leukoderma.

***Conclusions:***

Conclusions: Increasing awareness of religious practices that cause contact dermatitis will help in providing culturally-sensitive dermatologic care.

**Abstract Title: The Social Media Self-Patch Test: An Analysis of Recommendations on the r/SkincareAddiction Subreddit**

**Authors and Affiliations:** Jennifer Ogah, Keck School of Medicine of USC

**Abstract**

**Objectives:**

r/SkincareAddiction (ScA) is a popular forum on the social media platform, Reddit. Among the skincare advice dispensed on ScA are recommendations on self-patch testing products at home. We sought to compare self-patch testing recommendations from r/SkincareAddiction to Repeated Open Application Test (ROAT) protocols.

**Methods:**

We searched ScA in February 2022 using the term “patch test” and included posts describing self-testing indications and methodology. We excluded posts on patch testing performed in the healthcare setting as well as those posted by healthcare professionals.

**Results:**

Fifty-two ScA posts met inclusion criteria. Self-testing of products was recommended most frequently to detect allergenicity (94.7%), irritancy (31.6%), comedogenicity (31.6%), and “sensitivity” not otherwise specified (10.5%). The most commonly advised testing duration was 24-48 hours (57.1%) followed by 7-14 days (47.6%). The most frequently recommended test locations were the face (96.6%), arm (51.7%), around the ear (41.4%), or neck (17.2%). A minority of posts recommended diluting potentially irritating products with moisturizer (6.5%), rinsing off cleansers after 5-10 minutes (4.8%), and allowing moisturizers to remain on the skin (1.6%). In contrast, ROAT protocols generally advised testing on the volar forearm for 1-2 weeks, for the sole purpose of detecting/confirming contact allergy.

**Conclusions:**

The ScA’s guidance on self-testing of products has the potential to produce false-negative or false-positive reactions. This unique instance of crowdsourced (rather than evidence-based) skincare techniques could contribute to distorted perceptions in the patch test clinic.

## **Abstract Title: Satisfaction With Health Care in Patients With Allergic Contact Dermatitis**

**Authors and Affiliations:** Michelle Xiong, Brown University; Nicholas Battis, Park Nicollet Health System; Anne Neeley, Park Nicollet Dermatology

### **Abstract**

#### ***Objectives:***

Allergic contact dermatitis (ACD) is a diagnosis that requires significant patient education for proper management. There is limited information regarding patient satisfaction. We aimed to assess patient satisfaction among adults in the United States with ACD.

#### ***Methods:***

Data from the 2016-2019 Medical Expenditure Panel Survey was analyzed.

#### ***Results:***

Comparing adults with ACD (n=119) to a control group of adults without ACD (n=86,291), those with ACD trended toward higher rates of high satisfaction (response of “always”) with health care: provider listened carefully (61.3% vs 55.8%; p=0.268), explained things clearly (75.8% vs 57.9%; p<0.001\*), spent enough time (56.5% vs 50.4%; p=0.222), and demonstrated respect (70.9% vs 61.9%; p=0.064).

Comparing adults with ACD to adults with another chronic skin diagnosis such as psoriasis (n=148), those with ACD also trended toward higher rates of high satisfaction: provider listened carefully (61.3% vs 49.1%; p=0.015\*), explained things clearly (75.8% vs 52.6%; p<0.001\*), spent enough time (56.5% vs 56.0%; p=0.920), and demonstrated respect (70.9% vs 57.7%; p=0.023\*). Overall satisfaction scores (out of 10) were not significantly different between ACD and control (8.11 vs 8.23; p=0.83).

#### ***Conclusions:***

Adults with ACD, compared to the general population and adults with psoriasis, had higher rates of satisfaction in each domain studied. A statistically significant difference was observed between adults with ACD and their satisfaction with provider explanations when compared with adults with psoriasis and the general population, as well as for satisfaction with provider respect and listening compared with psoriasis.



## **Abstract Title: Evaluating Contact Allergens in the Top 25 Most Mentioned Western and Asian Skin Care Products on Reddit 2022**

**Authors and Affiliations:** Benjamin Tran, Medstar Georgetown University/Washington Hospital Center; Emily Kim, Georgetown University School of Medicine; Alan Moshell, Georgetown University/Medstar Medical Group

### **Abstract**

#### ***Objectives:***

Social media platforms are commonly used by dermatology patients to research and share opinions on skin care products (SCPs). Reddit is among the top 20 websites visited in the world. r/SkinCareAddiction (SCA) and r/AsianBeauty (AB) are subreddits discussing Western and Asian SCPs with 1.5 million and 1.7 million subscribers, respectively. This study analyzes presence of contact allergens in the top 25 most mentioned Western and Asian SCPs from both subreddits.

#### ***Methods:***

The top 25 most mentioned skin care products in SCA and AB subreddits from 2021-2022 were analyzed for presence of allergens listed in the ACDS Core Allergen Series 2020.

#### ***Results:***

Analysis of 50 products revealed the top three most common allergens were phenoxyethanol (total n = 21, SCA = 12), ethylhexylglycerin (total n = 15, AB = 9), and tocopherol (total n = 10, SCA = 5). Amongst the SCA products, CeraVe and The Ordinary products demonstrated the highest prevalence of allergens. A higher number of Western products (n = 22) had at least one contact allergen compared to Asian products (n = 20), with an average of 2.14 allergens per product compared to 2.20, respectively.

#### ***Conclusions:***

Patients often seek recommendations on SCPs on Reddit including products from Western and Asian countries. Understanding the patient's perspective and social media trends can aid dermatologists in clinical diagnosis and management of suspected contact dermatitis due to SCPs. Limitations include the anonymous nature of the Reddit platform and possible over prevalence of certain products due to a small number of users.

## **Abstract Title: Preventing Occupational Dermatitis in Health Care Workers: An E-learning Module**

**Authors and Affiliations:** Katherine Zagrodney, VHA Home HealthCare; Emily King, VHA Home HealthCare; University of Toronto; Emmelie Mohammed, Queens University; Kathryn Nichol, University Health Network; D. Linn Holness, University of Toronto and St Michael's Hospital

### **Abstract**

#### ***Objectives:***

While occupational hand dermatitis (OHD) is common in healthcare workers (HCWs), previous reports have identified a lack of training materials for HCWs. The objective of this study was to develop and evaluate an OHD training e-module for HCWs in Ontario, Canada.

#### ***Methods:***

An expert advisory committee provided the training content. Following the Kirkpatrick model, the module was tested by Ontario HCWs through a usability survey to capture reaction, a pre- and post-training OHD knowledge test, and a survey on intent to change work hand hygiene behaviours. Six-month follow-up surveys also tested OHD knowledge retention and skin health behaviour changes.

#### ***Results:***

254 HCWs completed the training module and pre- and post- training surveys, and 144 HCWs completed the six month follow-up survey. The e-module was rated as highly useable. Average OHD knowledge test scores significantly improved by 19% between the pre-test (64.50%) and post-test (83.50%); six-month follow-up scores indicated OHD knowledge was retained over time with an average score of 75%. Most participants (72.83%, n=185) indicated intention to change practices, and, at six-month follow-up the majority of survey respondents (76.69%) reported changing work practices.

#### ***Conclusions:***

This training was found to be highly useable, to increase OHD knowledge immediately and over time, and to change workplace skin health behaviours for HCWs. The major output from this research is an evaluated 10-minute OHD training e-module for HCWs in French and English, publicly available at no cost.

#### ***Acknowledgements:***

Funding for this project was received from the Workplace Safety and Insurance Board (WSIB).

**Abstract Title: Impact of Climatology and the COVID Pandemic on the Incidence of Toxicodendron Dermatitis in the Southwest and Piedmont Regions of Virginia**

**Authors and Affiliations:** John Jelesko, Virginia Polytechnic and State University; Hunter Sharp, Carilion Clinic; Martha Tenzer, Carilion Clinic; Douglas Murray, Virginia Tech Carilion School of Medicine; Joshua Eikenberg, Virginia Tech Carilion School of Medicine

**Abstract**

**Objectives:**

In 2006, Mohan et al. proposed that over time, increasing atmospheric CO<sub>2</sub> levels could make poison ivy more allergenic. This study aimed to evaluate this theory through quantifying clinical trends in Toxicodendron dermatitis presentation over a 14-year period. We hypothesized that Toxicodendron plants with increased allergenicity over time may result in an increased incidence of Toxicodendron dermatitis and that increase in outdoor recreational activity associated with the COVID pandemic may increase the incidence of Toxicodendron dermatitis.

**Methods:**

The incidence of medical encounters associated with Toxicodendron dermatitis was monitored using deidentified Carilion Clinic medical records from 2008 to 2022, and then statistically analyzed.

**Results:**

- A) The incidence of Toxicodendron dermatitis showed seasonal variation. However, the underlying stationary rate of Toxicodendron dermatitis did not significantly change over this time interval.
- B) The annual incidence of Toxicodendron dermatitis showed a significant increase correlated with onset of the COVID pandemic in 2020. Controlled contrasts of pre- vs. onset-of- COVID Toxicodendron dermatitis confirm a significant increase in Toxicodendron dermatitis.

**Conclusions:**

Aside from seasonal variation, there was no incremental increase in incidence of Toxicodendron dermatitis during this 14-year interval. However, there was a focal spike in incidence of Toxicodendron dermatitis correlated with the COVID pandemic and its associated public health restrictions, presumably from an increase in outdoor recreation. Limitations of this study are that it evaluated data from a single geographic area and relied on accuracy of clinicians' diagnosis of Toxicodendron dermatitis.

## **Abstract Title: More Than Just MI: Isothiazolinone Allergy in North America From 2017-2020**

**Authors and Affiliations:** Margo Reeder, UW School of Medicine & Public Health; Donglin Zhang, University of Wisconsin School of Medicine and Public Health; Sirkanthmadhavan Aravamuthan, Department of Dermatology, University of Wisconsin School of Medicine; NACDG Members, North American Contact Dermatitis Group

### **Abstract**

#### **Objectives:**

Isothiazolinones are common causes of allergic contact dermatitis. The North American Contact Dermatitis Group (NACDG) tested four isothiazolinones between 2017-2020: methylisochloroisothiazolinone/methylisothiazolinone (MCI/MI), methylisothiazolinone (MI), benzisothiazolinone (BIT) and octylisothiazolinone (OIT).

#### **Methods:**

Between 2017-2020, patients who were patch tested with MCI/MI 0.02% aq., MI 0.2% aq., BIT 0.10% pet., and OIT 0.025% pet. were analyzed. Additional data collected include sex, age, primary site of dermatitis, allergen source, and patient occupation/industry.

#### **Results:**

Of 9068 patch tested patients, 21.9% (1983) had a positive reaction to at least one isothiazolinone: 14.4% (1302) were positive to MI followed by 10.0% (905) to MCI/MI and 8.6% (778) to BIT. Sensitization to OIT was low, with 0.54% (49) positive reactions. Among 1983 allergic patients, 56.0% patients had a positive reaction to only 1 allergen; 35.6% reacted to 2 allergens; 8.0% reacted to 3 allergens; and 0.5% reacted to all four isothiazolinones. In this population, 35.4% (685) patients were positive to both MCI/MI and MI. Among 778 BIT+ patients, 56.8% (442) were positive solely to BIT; however 41.5% (323) had concurrent positive reactions with MCI/MI and/or MI. Compared to isothiazolinone negative patients, allergic patients were more likely to be older than 40, have hand involvement, and have occupational skin disease.

#### **Conclusions:**

Isothiazolinone allergy is common and cross-reactivity between MCI/MI, MI, and BIT occurs frequently.

**Abstract Title: Assessing Reporting of Race and Ethnicity in Atopic Dermatitis Clinical Guidelines**

**Authors and Affiliations:** Katie Roster; Lillian Xie, New York Medical College; Ahmad Rajeh, New York Medical College; Shari Lipner, Weill Cornell Medicine

**Abstract**

***Objectives:***

Minority populations have historically been underrepresented in clinical research. The extent to which this impacts clinical guidelines and, by extension, clinical practice is unknown. This study aims to analyze the degree of racial, ethnic, and sex representation in the studies included in The American Academy of Dermatology's (JAAD) clinical practice guidelines on Atopic Dermatitis.

***Methods:***

We reviewed the 157 cited studies in the JAAD clinical guidelines for Atopic Dermatitis and extracted the study type, country, number of patients, age, sex, race, and ethnicity. Inclusion criteria consisted of all randomized controlled trials and retrospective and prospective studies.

***Results:***

Of the 157 cited studies, 102 (64.9%) met the inclusion criteria. The number of study participants ranged from 10 to 10,061; the average cohort was 238, with 51.5% female and a mean age of 17 years. Fourteen (13.7%) of the studies reported the race or ethnicity of participants. Among these, 73% of participants were White or Caucasian, 12.7% were Black or African American, 5.6% were Asian, 1.8% were Hispanic, and 6.8% were reported as other.

***Conclusions:***

The studies that reported race and ethnicity were generally representative of the United States population. However, we cannot fully determine the demographic of study participants because the overwhelming majority failed to report the racial and ethnic demographics of the participants. To ensure culturally inclusive clinical care, guidelines should prioritize including studies that report racial and ethnic data.

**Abstract Title: Biologics and Non-Biologics for Atopic Dermatitis and Inflammatory Skin Disorders**

**Authors and Affiliations:** Katie Roster; Christian Gronbeck, University of Connecticut Health Center; Hao Feng, University of Connecticut Health Center

**Abstract**

***Objectives:***

The development of targeted biological therapies has revolutionized the treatment of inflammatory skin conditions. In 2017 Dupilumab became the first biologic approved for treating moderate-to-severe atopic dermatitis. In this study, we sought to analyze prescription trends, costs, and utilization of Dupilumab compared to other biologics and non-biologics.

***Methods:***

Using the Medicare Part D database, we analyzed annual 30-day prescription claims, costs, and annual rates of change for biologics and non-biologics submitted by dermatologists from 2018-2020. The cost per 30-day claim was estimated by dividing the total annual cost by the total 30-day claims.

***Results:***

The average rate of increase for the fifteen biologics studied was 20.61% annually and 0.22% for non-biologics. Dupilumab 30-day claims increased at an annual rate of 83.44%. Dupilumab accounted for 10.5% of the prescription claims of biologics and 6.5% of the cost. The average cost was \$3,102 per 30 days, making it the fifth most expensive biologic, with costs increasing at an average rate of 3.23% over the three years.

***Conclusions:***

Dupilumab is among the costliest biologics, and the cost continues to rise. Despite the high cost, dermatologists rapidly adopted Dupilumab into their treatment regimens after its approval in 2017. Comparatively, non-biologics experienced stagnant growth, suggesting that dermatologists increasingly prefer biologics over conventional therapies

## **Abstract Title: Skinfluencers: Does Training Background Matter From a Contact Allergen Perspective?**

**Authors and Affiliations:** Claire Herzog, University of Minnesota; Hadley Johnson, Hadley Johnson; Rob Shaver, University of South Dakota; Sara Hylwa, Hennepin Healthcare and HealthPartners Institute

### **Abstract**

#### ***Objectives:***

Skin care influencers, or “skinfluencers,” promote skin care products on social media. We analyzed ingredients of personal care products (PCPs) shared on Instagram by skinfluencers of varying academic backgrounds to determine common contact allergens found in the recommended products between groups.

#### ***Methods:***

The Google search engine was used to identify 5 skinfluencers with the greatest number of followers from the following vocations: physician (MD), physician assistant (PA), nurse practitioner (NP), and aesthetician. From March-April 2021, PCPs shared (via story or post) from each account were tracked and analyzed for the presence of ACDS core allergens.

#### ***Results:***

Tocopherol, phenoxyethanol, and fragrance were the most frequently identified contact allergens among PCPs recommended by all skinfluencer groups. 39% of NP-recommended PCPs contained fragrance, followed by aesthetician (34%), PA (31%) and MD (19%). Sodium benzoate, propylene glycol, and sorbic acid/sorbitan sesquioleate represented either the fourth or fifth most frequently identified contact allergen in each of the 4 groups. PCPs posted by NPs contained the highest average number of contact allergens (mean 4.3 contact allergens/PCP (132/31)), followed by PAs (mean 2.2 contact allergens/PCP (334/153)) and aestheticians (mean 1.8 contact allergens/PCP (418/232)). MDs recommended the least allergenic PCPs overall (mean 1.7 contact allergens/PCP (502/299)).

#### ***Conclusions:***

Skinfluencers of varying training backgrounds promoted skin care products with similar contact allergen profiles. Although recommended products commonly contained at least one ACDS core allergen, these were (besides fragrance) often infrequent sensitizers. MDs posted most frequently and shared PCPs containing the lowest average number of contact allergens.

## **Abstract Title: Identifying Allergens in Modern Eye Cosmetic Practices**

**Authors and Affiliations:** Christina Murphy, University of Pennsylvania; Katherine Brown, University of Pennsylvania

### **Abstract**

#### ***Objectives:***

Broad use of eyelash and eyebrow cosmetic treatments in the community has expanded the categories of allergens to which the periorbital region is exposed. Many of these products and procedures are not regulated and have not been studied by dermatologists. This study focuses on characterizing some of the allergens that may be encountered in modern eye cosmetic practices, with a focus on magnetic false eyelashes.

#### ***Methods:***

Magnetic false eyelashes were purchased from local commercial and online retailers. Products were tested using Nickel Allergen Detector Spot-Test (dimethylglyoximeethanolammoniacal, Dormer 211) and Cobalt Allergen Detector Spot-Test (Nitroso R salt solution, Dormer 211). Ingredients disclosed on packaging were analyzed and compared against current eyelid patch testing series.

#### ***Results:***

Of the magnetic false eyelashes that were tested as part of this study, none were positive to nickel or cobalt. False eyelash packaging was analyzed and found to be highly variable with regards to disclosure of product ingredients. Of the 6 magnetic eyelash packages that disclosed ingredients, 2 contained acrylates. We compare current eyelid patch testing series in use and evaluate them according to our findings as well as an updated review of the literature. 1,2

#### ***Conclusions:***

Based on the data presented here, magnetic false eyelashes are likely a safe product for use in patients with nickel allergy. However, acrylates are still frequently present in these products. In addition to the data we have generated regarding nickel and cobalt contained in magnetic false eyelashes, we are actively investigating the nickel and cobalt content of microblading equipment used in the community.<sup>3</sup> We aim to use this data as well as data reported in the literature to inform a proposal for a modern eye cosmetic patch testing series.

#### ***Acknowledgements:***

This research was supported by the ACDS Clinical Research Award.



## **Abstract Title: Allergenic Metal Content of Implanted Medical Devices**

**Authors and Affiliations:** Mariah Reed, University of Minnesota Medical School; Sara Hylwa, Hennepin Healthcare and HealthPartners Institute

### **Abstract**

#### ***Objectives:***

To evaluate the extent to which allergenic metals, such as nickel, are present in biomedical devices. While metal hypersensitivity to implanted devices is felt to be rare, the potential for reactions as a cause of biomedical implant rejection may warrant finding alternative ways to manufacture devices using ingredients that are less allergenic.

#### ***Methods:***

Metal content of 13 types of implanted devices (deep brain stimulators, cochlear implants, stents (intracranial, renal, cardiac), prosthetic joints, amplatzers, Nuss bars, Essure occludors, pacemakers, IUDs, spinal screws, and polypropylene mesh (used in breast reconstruction)) were searched using PubMed. Key words such as “hypersensitivity” and the device of interest were used in the search. Only papers from 2009 onward met inclusion criteria.

#### ***Results:***

7 of the 13 implanted devices have the potential to contain nickel (intracranial stents, renal stents, cardiac stents, prosthetic joints, amplatzers, Nuss bars, Essure occludors); 5 have been reported to contain chromium (renal stents, cardiac stents, prosthetic joints, Nuss bars, spinal screws); 5 have the potential to contain cobalt based on reports (renal stents, cardiac stents, prosthetic joints, spinal screws, and deep brain stimulators).

#### ***Conclusions:***

Allergenic metals such as nickel, chromium, and cobalt were found to be components of around half of the implanted devices in this search. These metals stand as three of the most common metals associated with implant failure and allergic reactions due to metal hypersensitivity.

**Abstract Title: Patch Test Results Among Patients 65 Years of Age and Older: A Retrospective Analysis of the North American Contact Dermatitis Group Data (2009-2020)**

**Authors and Affiliations:** Hadley Johnson, JiaDe Yu, Massachusetts General Hospital; NACDG Members, North American Contact Dermatitis Group

## **Abstract**

**Objectives:**

This analysis provides an update to a 2012 North American Contact Dermatitis Group (NACDG) study regarding the frequency of positive and clinically relevant patch test results in older adults (OA) as compared to younger adults (YA).

**Methods:**

Retrospective analysis of OA ( $\geq 65$  years) and YA (19 to 64 years) patch tested by NACDG, 2009 to 2020. Irritant reactions were excluded from analysis.

**Results:**

Of 28,243 patients patch tested, 5,366 (19.0%) were OA, while 21,343 (75.6%) were YA. There was no difference in the frequency of positive patch test reactions (67.1% vs. 67.3%,  $P = 0.7430$ ) or in the frequency of clinically relevant positive patch test reactions (53.8% vs. 53.4%,  $P = 0.2670$ ) between OA and YA. OA were more likely than YA to have a final diagnosis of ACD after patch testing (50.8% vs. 49.2%,  $P = 0.0345$ ), but were less likely to have a final diagnosis of atopic dermatitis (5.3% vs. 13.9%,  $P < 0.0001$ ). Compared with YA, OA were more likely to react to fragrance mix I, hydroperoxide of linalool, benzisothiazolinone, Myroxylon pereirae, formaldehyde, neomycin, bacitracin, iodopropynyl butylcarbamate, quaternium-15, cinnamal, and methylchloroglutaronitrile/phenoxyethanol ( $P$  values  $< 0.0026$ ). OA were less likely to react to nickel and methylchloroisothiazolinone/methylisothiazolinone ( $P$  values  $< 0.0225$ ).

**Conclusions:**

The frequency of at least one positive patch test reaction and at least one clinically relevant positive patch test reaction did not differ between OA and YA. However, final diagnosis after patch testing and the rate of specific allergens differed between the two groups.

## **Abstract Title: Contact Allergens in Wig Adhesives**

**Authors and Affiliations:** George Luong, Northwestern University Feinberg School of Medicine; Walter Liszewski, Northwestern University

### **Abstract**

#### ***Objectives:***

Wigs and hairpieces can serve as a cosmetic replacement to reduce the psychological effects of alopecia. However, these materials can cause allergic contact dermatitis. In our experience, identifying wig glue contact allergens by patch testing is easy, but identifying allergen-free materials is challenging. Our study aims to characterize the allergens present in wig adhesives and identify safe alternatives.

#### ***Methods:***

We conducted a review of branded wig adhesive products found by searching for the terms “wig glue” and “wig tape” in the Google Shopping website. The availability of ingredient lists and the frequencies of ingredients were analyzed.

#### ***Results:***

65 wig glues and 50 wig tapes remained for analysis after removing duplicates, unbranded products, and products not sold directly by the company or a wig/hair-specific wholesaler. 38 of 65 wig glues (58.46%) and 50 of 50 wig tapes (100%) did not disclose their ingredients on the shopping site or on the manufacturer’s MSDS. Of the 35 unique ingredients listed in wig glues, the three most common were water (16/65, 24.61%), fragrance (10/65, 15.38%), and acrylate polymer (9/65, 13.85%).

#### ***Conclusions:***

Fragrance and acrylates are abundant in identified wig glues. However, all wig tapes and a notable number of wig glues did not list their chemical components. This stymies the ability of patch testing physicians to identify safer wig adhesives for their patients.

## **Abstract Title: Workers Presenting With Possible Facial Protective Equipment Problems**

**Authors and Affiliations:** Joel DeKoven, University of Toronto-Sunnybrook; Meghan Clynick, University of Toronto; Sandra Skotnicki, University of Toronto; D. Linn Holness, University of Toronto and St Michael's Hospital

### **Abstract**

#### ***Objectives:***

Workers were required to use facial protective equipment (FPE) in many settings during the COVID-19 pandemic. There have been a number of reports of survey findings but few that provide clinical investigation. The objective is to summarize our experience in assessing workers presenting with possible FPE related skin problems.

#### ***Methods:***

In addition to the information routinely collected in our patch test database, additional chart abstraction was undertaken to obtain detailed diagnostic information and return to work interventions.

#### ***Results:***

24 patients were assessed: most were female (92%); mean age was 45 years. The majority worked in health care in clinical roles. Many (61%) lost time from work (mean 26 days). Fifteen were patch tested with their masks; 2 were positive. In one case the specific allergen was identified as disperse blue dye 104/124 mix and in the other case no specific allergen was detected. The possibility of allergic contact dermatitis related to the metal nosepiece was considered in four patients who were positive to nickel and/or cobalt. Nineteen had irritant contact dermatitis related to the mask, often with aggravation of underlying rosacea, atopic dermatitis or acne. Four had diagnoses unrelated to their facial protection.

#### ***Conclusions:***

The majority of workers had irritant contact dermatitis often accompanied by aggravation of an underlying skin condition such as rosacea. Two had allergic contact dermatitis to their masks. Individuals with ongoing facial problems related to the use of FPE require investigation and patch testing to ensure a complete diagnosis is made.

**Abstract Title: Skin Reactions Associated With Use of At-Home Gel/Acrylic Nail Manicure Kits: A Facebook Survey**

**Authors and Affiliations:** Jana Guenther, University of Southern California; Thomas Norman, University of Southern California; Brandon Adler, University of Southern California

**Abstract**

***Objectives:***

Prevalence of contact allergy to (meth)acrylates, the most common nail cosmetic allergens, is increasing. Easy availability of at-home gel/acrylic manicure kits may increase risk of sensitization to acrylic monomers. We hypothesize that closure of nail salons during COVID-19 contributed to the prevalence of acrylate allergy through increased at-home use by untrained individuals.

***Methods:***

This is an IRB-approved cross-sectional survey of the “Nail Allergies, Disease, and Disorders Support” Facebook group. Inclusion criteria were self-reported skin reactions associated with acrylic nails and age ≥18 years. Questions included demographics, atopic history, acrylic nail use patterns, skin reaction timing/nature, quality of life, treatment-seeking, and patch testing awareness/utilization.

***Results:***

There were 111 survey respondents, all female, mostly white (83%) and most frequently 35-44 years old (33%). Nearly 80% reported using at-home gel/acrylic kits, most of whom (62%) initiated home use during COVID-19 and reported home use preceded onset of skin reactions (85%). Most users learned about home kits through social media (69%) and received training through websites/online videos (75%). Skin reactions most commonly involved the hands/fingers (89%) and fingernails (64%); the most frequent symptoms were itching (95%), redness (82%), and dryness/peeling/cracking (80%). While 80% of respondents were aware of patch testing to diagnose acrylate allergy, only 20% reported having the test performed. Study limitations include response/recall bias and lack of diagnostic confirmation.

***Conclusions:***

Use of at-home gel/acrylic nail manicure kits was commonly associated with development of skin reactions suggestive of allergic contact dermatitis, raising important questions about the need for regulation of these products.

**Abstract Title: Allergic Contact Dermatitis to Azelaic Acid Complicating Rosacea**

**Authors and Affiliations:** Tara Ghalambor, University of Arizona College of Medicine - Phoenix; Ariel Darnall, Honorhealth; Kimberly Yeung-Yue, Southwest Skin Specialists; Dathan Hamann, Contact Dermatitis Institute

**Abstract**

**Background:**

Allergic contact dermatitis to azelaic acid-containing medications has infrequently been reported.<sup>1-2</sup> To date, patch testing utilizing the isolated allergen has not been performed. This case highlights the potential for iatrogenic skin disease resulting from azelaic acid.

**Conclusions:**

We present a case of positive patch testing to azelaic acid containing gel and azelaic acid 15% in petrolatum. Azelaic acid has well-documented efficacy for rosacea, acne vulgaris, and melasma.<sup>3</sup> In patients with refractory skin disease, clinicians should consider possible iatrogenic exacerbations to dermatological interventions, such as azelaic acid, particularly in patients who utilized multiple treatments without improvement or worsening condition.

**Acknowledgements:**

DH is related to an owner of SmartPractice Allergen Bank, and owner of SmartPractice, a company which manufactures and sells patch testing materials, including TRUE Test. The remaining authors have no relevant conflicts of interest.

**Abstract Title: Chronic, Severe Lip Dermatitis Responding to a Low Balsam of Peru Diet**

**Authors and Affiliations:** Camila Fontane, Brigham and Women's Hospital; Ari Goldminz, Brigham & Women's Hospital

**Abstract**

**Background:**

Common causes of lip dermatitis include allergic contact dermatitis (ACD) and irritant contact dermatitis (ICD).<sup>1</sup> Fragrances are among the most frequent allergic culprits.<sup>2</sup> We present a case of severe lip dermatitis that responded to a low balsam of Peru diet to highlight the role of allergen avoidance diets in some patients with ACD.

**Conclusions:**

This case highlights the role of allergen avoidance diets in lip ACD. Although for most patients with ACD dietary avoidance strategies are not necessary, further research is needed on the role of allergen avoidance diets in ACD given the potential impact for select patients.

**Abstract Title: Allergic Contact Dermatitis to Plastic Glasses Frames: Patch Test Findings and a Supplemental Testing Approach**

**Authors and Affiliations:** Camila Fontane, Brigham and Women's Hospital; Rebecca Dufner, Tufts Medical Center; Ari Goldminz, Brigham & Women's Hospital

**Abstract**

**Background:**

Reactions to plastic wearable products have been previously described, such as eyeglasses, sunglasses nose pads, flip flop straps, and a wristwatch strap.<sup>2,3,4</sup> We present a simple evaluation method for suspected glasses-associated dermatitis.

**Conclusions:**

While identification of specific allergens within plastic glasses frame materials can be challenging, skin testing to the frames can help assess suspected reactions.

**Abstract Title: Lesional Patch Testing for Diagnosis of Fixed Drug Eruption**

**Authors and Affiliations:** Nicholas Battis, Park Nicollet Health System; Samuel Ekstein, Park Nicollet Health Services; Erin Warshaw

**Abstract**

**Background:**

To date, two cases of fixed drug eruptions (FDE) to pamabrom have been reported; one occurred in a perioral distribution and other presented on the trunk and thigh.

**Conclusions:**

We present the third case of FDE to pamabrom.

## **Abstract Title: Negative Formaldehyde Testing in Lens Cleaning Wipes and Sprays**

**Authors and Affiliations:** Nicholas Battis, Park Nicollet Health System; Samuel Ekstein, Park Nicollet Health Services; Sara Hylwa, Hennepin Healthcare and HealthPartners Institute

### **Abstract**

#### ***Objectives:***

Preservatives, including formaldehyde and formaldehyde releasers, are often undeclared in cleaning products. We aimed to assess the presence of formaldehyde in lens cleaning wipes and sprays.

#### ***Methods:***

7 lens cleaning sprays and 7 lens cleaning wipes were selected from the top sellers on Amazon, Walmart, and Target websites. Chromotropic acid testing was conducted on all samples per protocol. A positive control solution of 40 uL formaldehyde/1 mL distilled water and a negative control solution of distilled water were prepared. Reagent solution of 4 mg chromotropic acid/mL of sulfuric acid was prepared. Sample solutions were prepared by adding a 1 mL sample into 1 mL distilled water. Approximately 0.5 mL of reagent solution was added to separate small glass test tubes, then placed individually into glass jars containing the samples, positive control, and negative control. All glass jars were stoppered, kept in the dark for 48 hrs, then read. A violet color change in the test tube containing the reagent solution indicated a positive test for formaldehyde.

#### ***Results:***

At 48-hrs, the positive control was found to be positive, negative control was negative. All sample solutions (n=14) were negative.

#### ***Conclusions:***

Formaldehyde and formaldehyde releasers were not detected in any lens cleaning wipes or sprays. For patients with only a formaldehyde allergy, lens cleaning products are likely safe for use. Limitations include the number of products tested.



**Abstract Title: Isothiazolinones in Triamcinolone: An Undeclared and Unwanted Ingredient**

**Authors and Affiliations:** Nicholas Battis, Park Nicollet Health System; Sara Hylwa, Hennepin Healthcare and HealthPartners Institute

**Abstract**

**Background:**

Methylisothiazolinone (MI) is a common causative agent of allergic contact dermatitis (ACD). It is required to be declared in skincare products, but occult MI has been described in varying over-the-counter personal care products. We report undeclared MI in a common prescription topical steroid cream.

**Conclusions:**

Undeclared MI can be found even in prescription products and should be suspected in cases of otherwise unexplained dermatitis with MI allergy.

**Abstract Title: Chemical Leukoderma Induced by Acrylates**

**Authors and Affiliations:** Samuel Ekstein, Park Nicollet Health Services; Sara Hylwa, Hennepin Healthcare and HealthPartners Institute

**Abstract**

**Background:**

Acrylates are used to make strong glues or molding into plasticized shapes. They are found in bone cement, industrial glues, artificial fingernails, dentures, temporary dental crowns, and ultraviolet-cured inks and paints. We describe a rare case of chemical leukoderma from chronic occupational exposure to acrylates.

**Conclusions:**

This is a rare case of acrylate induced chemical leukoderma and dysesthesias. Although this patient was wearing gloves while handling acrylate containing products, acrylic monomers can penetrate most types of gloves.

## **Abstract Title: Cross-Reactivity Between Propylene Glycol and Butylene Glycol**

**Authors and Affiliations:** Samuel Ekstein, Park Nicollet Health Services; Nicholas Battis, Park Nicollet Health System; Anne Neeley, Park Nicollet Dermatology

### **Abstract**

#### ***Objectives:***

Propylene glycol (PG) and butylene glycol (BG) are not known to be cross-reactors. However, no large-scale studies have assessed the cross-reactivity rate between these two structurally and functionally similar compounds. The aim of this study is to determine whether PG and BG demonstrate cross-reactivity.

#### ***Methods:***

This is a retrospective chart review of 871 patients at the Park Nicollet Contact Dermatitis Clinic who underwent patch testing from 2020 to 2022 to the North American Contact Dermatitis Group (NACDG) screening series (80 allergens) as well as the clinic's emulsifier panel (37 allergens). The frequencies of positive reactions and concomitant reaction rates were calculated.

#### ***Results:***

The prevalence of BG reactions in PG-allergic patients was 7.5%, whereas the prevalence of PG reactions in BG-allergic patients was 60%. For patients with a PG allergy, the relative risk (RR) of having a BG allergy versus all patients studied was 3.28 [95% CI: 1.64 to 6.58]. For patients with a BG allergy, the RR of having a PG allergy versus all patients studied was 3.31 [95% CI: 2.25 to 4.86].

#### ***Conclusions:***

This is the first large-scale study investigating the rates of cross-reactivity between PG and BG. For patients allergic to BG, PG should be considered a cross-reactor. This relationship is somewhat unidirectional, as for patients allergic to PG, cross-reactivity to BG falls below the current American Contact Dermatitis Society (ACDS) threshold of 10%.

**Abstract Title: Parabens: A Rare Cause of Systemic Allergic Contact Dermatitis**

**Authors and Affiliations:** Janis Chang, University of Ottawa; Jennifer Beecker; Melanie Pratt, University of Ottawa

**Abstract**

***Background:***

Parabens are preservatives which have been widely used for decades. Despite public perceptions of paraben safety, they are favoured for their cost, low toxicity, and low allergenicity. However, we report a rare case of systemic allergic contact dermatitis (ACD) to parabens, manifesting as recalcitrant erythema multiforme.

***Conclusions:***

As the ACDS 2019 non-allergen of the year, parabens are a rare allergen, with only 1% of patients having a positive patch test result in NACDG data. Nonetheless, dermatologists must remain aware of their potential to cause systemic ACD. Patch test positivity to paraben mix is frequently clinically relevant, and sensitization commonly occurs due to use of topicals on broken skin.

**Abstract Title: Occupational Polysensitization in a Cardiothoracic Surgeon**

**Authors and Affiliations:** Ariel Darnall, Honorhealth; Dathan Hamann, Contact Dermatitis Institute

**Abstract**

***Background:***

Occupational dermatoses are a common dermatologic issue that can cause significant morbidity. We present a case of occupational dermatosis in a cardiothoracic surgeon who previously had identified contact allergens in accelerator containing gloves with new onset allergens in accelerator free gloves. These accelerator-free gloves on further analysis were found to contain colophony which that patient was found to have an allergy to.

***Conclusions:***

We present a case of polysensitization with multiple occupational allergens in a healthcare worker. This case is unique because it highlights the importance of identifying occupational related allergens of additives not listed in product composition.

***Acknowledgements:***

DH is related to an owner of SmartPractice Allergen Bank, and owner of SmartPractice, a company which manufactures and sells patch testing materials, including TRUE Test. The remaining authors have no relevant conflicts of interest.

## **Abstract Title: Effect of Humidity and Temperature on Allergic Contact Dermatitis**

**Authors and Affiliations:** Anuk Burli, University of Rochester School of Medicine and Dentistry; Howard Maibach, Univ of California Hospital

### **Abstract**

#### ***Objectives:***

Verifying clinical relevance of a positive patch test may prove difficult. Factors such as humidity and temperature can lead to false positive and negative patch test results. We aimed to characterize the effect of humidity and temperature on patch test results.

#### ***Methods:***

Covidence, Embase, MEDLINE, PubMed, Web of Science, and Google Scholar were searched to identify relevant articles studying the effect of humidity and temperature on allergic contact dermatitis.

#### ***Results:***

Low humidity and temperature was associated with increased risk for doubtful/irritant following contact allergens: lanolin alcohol in petrolatum, formaldehyde in water, methylchloroisothiazolinone/methylisothiazolinone (MCI/MI) in water, epoxy resin in petrolatum, nickel sulfate, p-phenylenediamine (PPD), fragrance mix, ammoniated mercury, potassium dichromate, Myroxylon pereriae resin (balsam of Peru), oil of turpentine, methyldibromo glutaronitrile + phenoxyethanol (MDBGN + PE), and paraben mix

#### ***Conclusions:***

Our literature review demonstrates that humidity and temperature are related to the incidence of false positive and false negative patch tests for various contact allergens, necessitating caution when interpreting results during the winter season. In the case of irritant/doubtful occurring during winter months, repeat testing could be performed in the summer to rule out false-positive patch tests.

## **Abstract Title: Laundry Detergent as an Infrequent Cause of Skin Rashes: A Systematic Review**

**Authors and Affiliations:** Colin Burnette, Nova Southeastern University College of Osteopathic Medicine; Jourdan Hydol-Smith, Texan A&M School of Medicine; Yvonne Nong, Michigan State University College of Human Medicine; Marwa Hakimi, University of California San Francisco; Cory Dunnick, Colorado Skin Surgery & Dermatology

### **Abstract**

#### ***Objectives:***

We sought to determine the incidence and types of skin reactions elicited from laundry detergent exposure with a comprehensive systematic review.

#### ***Methods:***

A systematic review was conducted following PRISMA guidelines searching the literature using 4 databases. 6,177 articles were identified of which 86 met inclusion criteria of original reports written in English of human skin reactions from laundry detergent exposure.

#### ***Results:***

Laundry detergent exposures were categorized as direct if the detergent was in direct contact with the skin and indirect if fabric washed with detergent was the method of skin contact. Only seven articles identified skin reactions thought to be due to indirect laundry detergent exposure. Reported skin reactions included: twenty cases of granular parakeratosis due to benzalkonium chloride, a single case of allergic contact dermatitis to retained methylisothiazolinone, five cases of self-perceived itching from vests washed with an alkaline protease enzyme containing detergent, and 210 cases of irritant contact dermatitis from a laundry detergent marketed in the 1950s. Thirteen reports of clinical trials documented a lack of skin reactions from indirect laundry detergent exposures. The most common route of cutaneous reaction occurs from direct skin contact with laundry detergent.

#### ***Conclusions:***

Skin reactions resulting from contact with fabric washed with laundry detergent were rare in the literature. The sparse number of cutaneous reactions from indirect laundry detergent suggests causative reactions in the are infrequent. Individuals with pre-existing skin conditions and contact allergies may be more likely to experience adverse reactions but these findings have not been validated.

**Abstract Title: Confusion or Clarity? Analyzing Patterns of Consistency and Positivity in Patients Undergoing Repeat Patch Testing (PT)**

**Authors and Affiliations:** Tenzin Gyaltzen, Hamilton Allergy; Jason Ohayon, Hamilton Allergy

**Abstract**

**Objectives:**

To identify patterns in repeat patch testing (PT) results in Allergic Contact Dermatitis (ACD).

**Methods:**

A single site retrospective chart-review analyzed differences in repeat PT evaluating age, time intervals, allergens at initial and repeat PT.

**Results:**

Seventeen patients with ACD underwent repeat PT. Sixteen were female and one male (mean age = 47.8 yrs). Mean interval between PTs was 21.8 months. At repeat PT, an average of 2.8 new allergens (73%) and 2.3 resolved contact allergens (69%) were identified compared to original PT. Repeat PT identified most commonly newly sensitized allergens to: isothiazolinone, formaldehyde and gallate mix (each 6%). Most common resolved allergens included propylene glycol (10%), nickel, propolis and balsam of Peru (each 8%). On average, 1.0 original allergen (30% of total original allergens) remained positive upon repeat PT. Nickel was most commonly retained (18%) along with cobalt (12%). Patients with initial strong reactions (2+/3+) had fewer average newly sensitized allergens, 2.3 (57%), and resolved allergens, 1.9 (49%), in contrast to original milder (1+) PT reactions, identified with an average 3.25 (96%) new and 2.5 (95%) resolved allergens.

**Conclusions:**

Although repeat PT often found differences in results with time, allergen profile changes were more consistent in patients with stronger PT reactivity. Metal positivity remained most consistent of all ACD allergens tested. Patients with milder reactions at original PT experienced more variability in newly sensitized and allergen resolution, requiring further confirmation and mechanistic explanation in larger cohorts.

**Abstract Title: Noninfectious, Allergic Contact Otitis to Tixocortol Pivalate Containing Otic Solution**

**Authors and Affiliations:** Samavia Khan, Rutgers Robert Wood Johnson Medical School; Banu Farabi, NYMC; Babar Rao, Rutgers RWJMS; Bijan Sifai, NYMC

**Abstract**

**Background:**

Otitis externa is an infection of the external ear canal by fungal, bacterial, or other noninfectious agents. Treatments include antibiotic, antifungal, corticosteroid, and acidic otic solutions, which can rarely cause contact dermatitis. Tixocortol-21-pivalate represents class A corticosteroids, which reduce swelling in otitis externa. We present a case of tixocortol-21-pivalate induced otitis externa to contribute to the limited literature on otic solutions causing allergic contact dermatitis.

**Conclusions:**

Allergic contact dermatitis secondary to an otic solution was diagnosed late due to low clinical suspicion. By presenting this case, we aim to increase awareness amongst dermatologists of topical corticosteroid induced contact dermatitis (0.5-5.8% prevalence). Providers should suspect steroid allergy and pursue patch testing in the setting of unresolved otitis externa unresponsive to long-term topical steroids.

**Abstract Title: Line-Field Optical Coherence Tomography Assessment of Dyshidrotic Eczema: A Case Report**

**Authors and Affiliations:** Gaurav Pathak, Rutgers University; Thu Truong, Rutgers Robert Wood Johnson Medical School; Samavia Khan, Rutgers Robert Wood Johnson Medical School; Shazli Razi, Rao Dermatology; Babar Rao, Rutgers RWJMS

**Abstract**

**Background:**

Dyshidrotic eczema is characterized by recurrent vesicular eruptions with severe pruritus and a characteristic “tapioca pudding” appearance mimicking other vesicular dermatoses.(1) Line-field optical coherence tomography (LC-OCT) is a non-invasive technique to visualize the epidermis and upper dermis.(2) Here we used LC-OCT to describe pathologic findings of dyshidrotic eczema.

**Conclusions:**

In this case, we report the utility of using LC-OCT to support the differentiation among vesiculo-squamous conditions. LC-OCT imaging allows visualization of the epidermis and superficial dermis for evaluation of cellular morphology, pathologic structures, and inflammatory infiltrates and can potentially be a valuable clinical tool for rapid bedside assessment.

## **Abstract Title: A Comparison of Dermatitis Diagnoses Across Family Medicine, Internal Medicine, and Dermatology Care Teams**

**Authors and Affiliations:** Chidubem Okeke, Howard University College of Medicine; Sydney Sullivan, University of California, Davis; Lauren Hastings, University of California Davis; Olivia Keller, Department of Dermatology, University of California Davis School of Medicine; Peggy Wu, University of California - Davis; Matthew Ponzini, University of California Davis, Clinical and Translational Science Center

### **Abstract**

#### **Objectives:**

Assess demographics of patients diagnosed with dermatitis in internal medicine, dermatology, or family medicine in the University of California, Davis hospital system.

#### **Methods:**

This study has been approved by the University of California Davis Institutional Review Board. Characteristics between the specialties were compared using logistic regression in R®.

#### **Results:**

Of 12,337 patients seen by dermatology, between 2018-2022, 55.9% were self-reported White, 9.7% Asian, 4.3 % Black, 8.8% Hispanic/Latinx, 0.3% American-Indian/Alaska-Native, 0.4% Native-Hawaiian/Other Pacific-Islander, and 9.2% multi-racial. After controlling for age, sex, and insurance status, the odds ratio (OR) for patients self-reported as Asian, 0.67 (95% confidence interval, CI, 0.61-0.75), Black, OR 0.83 (95% CI 0.71-0.98), Hispanic/Latinx, OR 0.66 (95% CI 0.59-0.75), and multi-racial, OR 0.73 (95% CI 0.66-0.82), of being diagnosed with dermatitis by dermatology is significantly lower than White patients ( $p < 0.05$ ) when compared to internal medicine. The adjusted OR for patients self-reported as Asian 0.69 (95% CI 0.63-0.75), Black, OR 0.62 (95% CI 0.55-0.70), Hispanic/Latinx, OR 0.62 (95% CI 0.57-0.68), Native Hawaiian /Other Pacific Islander, OR 0.66 (95% CI 0.45-0.97) and multi-racial, OR 0.78 (95% CI 0.71-0.86) of being treated by dermatology is significantly lower than White patients when compared to family medicine. MediCal and Medicare beneficiaries were more likely to be seen by dermatology than internal medicine or family medicine for dermatitis.

#### **Conclusions:**

This analysis provides support that underrepresented race/ethnicity groups are more likely to be diagnosed with dermatitis by a non-dermatologist. Additional studies should explore the causality of the associations noted in this investigation.



**Abstract Title: Scattered Generalized Dermatitis in Patients Referred for Patch Testing: North American Contact Dermatitis Group Experience, 2001-2018**

**Authors and Affiliations:** Nisha Patel, Oakland University William Beaumont School of Medicine; Jonathan Silverberg, The George Washington University School of Medicine and Health Sciences

## **Abstract**

**Objectives:**

To characterize differences of demographics, etiology, and patch testing results among patients presenting with scattered generalized dermatitis (SGD) referred for patch testing.

**Methods:**

A retrospective analysis of patients patch tested by the North American Contact Dermatitis Group (NACDG) between 2001-2018.

**Results:**

Of 43,677 patients who were patch tested, 9858 (22.6%) had SGD. Compared to those who had dermatitis on other sites (OS), SGD patients had lower proportions of allergic (80.2% vs. 81.2%,  $P=0.0298$ ) and occupationally relevant (4.3% vs. 6.8%,  $P<0.0001$ ) reactions, however similar proportions of currently relevant reactions. SGD patients were more likely to be male, >40 years age, and have an atopic history, and less likely to be currently employed. Methylisothiazolinone, hydroperoxide of linalool, and fragrance mix I were the top 3 currently relevant allergens for SGD. Top ten allergens varied between SGD and OS groups. Cosmetics, beauty preparations, skin and healthcare products was a common source in the SGD group. Compared to OS, SGD patients were more likely to have a final diagnosis of ACD (58.9% vs. 56.7%,  $P<0.0001$ ), atopic (23.8% vs. 13.0%,  $P<0.0001$ ), other (18.6% vs. 16.0%,  $P<0.0001$ ), and nummular dermatitis (4.6% vs. 1.1%,  $P<0.0001$ ).

**Conclusions:**

Scattered generalized dermatitis was common and had several differences from OS with respect to patient characteristics, etiologies, clinically relevant allergens, occupational relevance, and final diagnosis.

