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**ABSTRACT
PACKET**

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Barriers to Patch Testing: Assessing Reimbursement Challenges and Practice Patterns Among Members of the American Contact Dermatitis Society

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Abstract

Objectives:

Allergic contact dermatitis (ACD) affects up to 20% of the population. Patch testing is the diagnostic standard, yet remains underutilized in the United States due to limited reimbursement and administrative barriers. This study aimed to assess current reimbursement models, compensation structures, and barriers to patch testing among members of the American Contact Dermatitis Society (ACDS).

Methods:

A 20-question electronic survey was distributed to ACDS members between December 2024 and January 2025. Questions assessed provider demographics, reimbursement practices, payer acceptance, and financial or logistical barriers. Quantitative data were analyzed descriptively, and qualitative free-text responses were reviewed independently by two authors to identify recurring themes.

Results:

Of 1,076 members, 76 responded (7.1%). Most were dermatologists (82%) with a median of 14 years in practice. Thirty-eight percent were paid via collections, 41% received only evaluation and management reimbursement, and 42% never performed extended patch testing. Forty-two percent did not accept Medicaid, and 3% did not accept Medicare. Respondents cited unclear billing guidance, insurance caps on allergens, and the absence of a physician work relative value unit as major barriers.

Conclusions:

Patch testing remains limited by inconsistent reimbursement, administrative complexity, and low Medicaid participation. Standardized billing practices, equitable reimbursement models, and clearer payer guidelines are needed to sustain patch testing services and improve patient access to accurate diagnosis and treatment.

Sports-Related Allergic Contact Dermatitis in Children: Practical Considerations for Clinicians

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Abstract

Objectives:

Allergic contact dermatitis (ACD) is a common inflammatory, pruritic condition affecting up to 20% of children. Most U.S. children (57.7%) participate in competitive or recreational sporting activities. Multiple types of sports equipment have been associated with the development of ACD, likely exacerbated by the effects of friction, sweat, and maceration during exercise.

Methods:

A search of English language literature between 1980 to 2024 was performed to identify articles related to ACD and sports. Studies with patients \leq 18 years of age were included.

Results:

ACD secondary to shin guards is frequently reported, with formaldehyde, rubber accelerators, and fabric dyes identified as common culprit allergens. Acetophenone azine is a more recently identified allergen causing shin guard ACD. Goggle ACD may be secondary to rubber accelerators, rubber vulcanizing agents or antioxidants, phenol-formaldehyde resin, or silicone. Rubber-related allergens have been reported to induce ACD related to swimming fins and exposure to rubber balls. Given the common use of athletic tapes, components of adhesives (particularly colophony) may induce ACD. Athletes are also at risk for ACD related to sunscreens and/or fragrances due to frequent use. There are specific modifications and substitutions that can be utilized for equipment-related ACD.

Conclusions:

Sports-related ACD is an important diagnosis to consider in children. Increased awareness of culpable allergens and equipment may assist dermatologists in conducting thorough histories and elucidating causes of ACD. Further research is required to develop therapeutic modifications and strategies to enable children with sports-related ACD to continue to utilize sports-associated equipment.

A Qualitative Analysis of AI Skincare Recommendations for Allergen Avoidance in Allergic Contact Dermatitis

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Abstract

Objectives:

As AI becomes more popular, patients have increasingly reported using generative AI to learn about their diagnosis of allergic contact dermatitis. This study evaluated whether ChatGPT, Gemini, and Claude recommend skincare regimens that exclude common contact allergens when prompted to do so.

Methods:

We used a standardized prompt to ask ChatGPT (GPT-4o), Gemini (2.5 Flash), and Claude (Sonnet 4.5) to recommend complete skincare regimens free of specific allergens. We repeated this process for 12 common allergens relevant to personal care products, first individually and then in combinations of two and three allergens, for a total of 20 queries per AI model. We recorded data from the products' websites, including ingredient lists, specificity, and the reputability of the listing, to evaluate the validity of the recommendations.

Results:

96.6% of the products recommended by ChatGPT, 93.9% by Gemini, and 96.7% by Claude were free of the specified allergens as listed on the product brands' websites. 98.0% of one-allergen, 94.8% of two-allergen, and 90.1% of three-allergen recommendations were free of the specified allergens. Brands most often recommended included Vanicream (35.2% of recommendations) and CeraVe (15.7% of recommendations). Less reputable sources for skincare, such as Etsy, were recommended by ChatGPT for 13.8% of recommendations, while Gemini did so for 1.2% and Claude for 0%.

Conclusions:

While generative AI can be a helpful resource in patient education and product exploration, patients should be counseled that it can make mistakes and cite unreliable sources, especially for requests with more than one allergen.

Therapeutic De-escalation Following Allergen Identification: Patch Testing Patterns and Outcomes in Atopic Dermatitis

Authors and Affiliations: Mihir M. Shah, BA, Stanford University School of Medicine; Jennifer K. Chen, MD, Stanford Department of Dermatology

Abstract

Objectives:

Patch testing represents the gold standard for the diagnosis of allergic contact dermatitis in patients with dermatitis, allowing for allergen identification and avoidance. This study examined whether patch testing resulted in a reduction of atopic dermatitis (AD) therapy utilization in dermatitis patients and whether prescribing trends differ by demographic and regional factors.

Methods:

We conducted a retrospective analysis using the Epic Cosmos dataset, encompassing de-identified electronic health records from health systems across the United States. Patients with dermatitis who underwent patch testing (CPT 95044) between 1/1/2023 and 12/31/2024 were included. Prescribing of advanced AD therapies (dupilumab, tralokinumab, upadacitinib, abrocitinib, ruxolitinib cream) was assessed for the one year prior to patch testing and the one year starting 3 months afterward, to give time for implementation of avoidance strategies. Odds ratios (ORs) with 95% confidence intervals were calculated.

Results:

Therapy use decreased from 8.6% before to 4.7% after patch testing, suggesting reduced need for prescription treatments after allergen identification. Asian (OR = 0.34, $p < 0.001$) and Black (OR = 0.67, $p = 0.02$) patients had lower odds of continued therapy than White patients, while males had higher odds (OR = 1.26, $p = 0.04$). Lower continuation was also seen in the Northeast and South as compared to the Midwest ($p < 0.001$). No differences were observed across insurance types.

Conclusions:

Patch testing was associated with a reduction in therapy utilization in patients with dermatitis. These findings highlight patch testing as a potential cost-saving and equitable strategy in AD management.

Acknowledgements:

Data supported by Epic Cosmos.

Investigating Paper-Based Personal Care Products as a Potential Source of Formaldehyde Allergic Contact Dermatitis

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Abstract

Objectives:

Formaldehyde may be used as a wet-strength additive in the manufacturing of paper-based products, and several countries outside the U.S. have declared its presence in such products. The objective of this study was to determine if commercially available paper-based products in the U.S. release formaldehyde through chromotropic acid testing, and thus to ascertain whether these products are a potential source of formaldehyde exposure for formaldehyde-allergic individuals.

Methods:

Products from the following categories were tested for formaldehyde release using the chromotropic acid method: paper towels (16), facial tissue (12), toilet paper (21), napkins (8), incontinence products (18), hygiene wipes (19), baby wipes (15), and makeup removing wipes (19). All positive tests were repeated to confirm reproducibility.

Results:

Out of 128 samples, 7 released formaldehyde at mild levels (0-2.5 ppm): 2 incontinence products from healthcare-related manufacturers, 2 hygiene wipes, and 3 makeup removing wipes. None of the products released formaldehyde at moderate (2.5-40 ppm) or strong (>40 ppm) levels.

Conclusions:

The threshold of formaldehyde exposure required to elicit allergic contact dermatitis in most sensitive individuals has been reported as 30 ppm. The seven products that released formaldehyde in this study did so at mild levels (0-2.5 ppm), thus exposure to these products is unlikely to potentiate allergic contact dermatitis in this population. Overall, based on the results of this study, we conclude that commercial paper-based products are not a significant source of formaldehyde exposure in the U.S.

Acknowledgements:

We gratefully acknowledge funding support for this project from the ACDS Clinical Research Award and thank Javed Shaik, PhD, for providing laboratory facilities and equipment for chromotropic acid testing.

Objective Color-Independent Measurements using 3D Photography are Associated with Differences in Patch Test Reactions

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Abstract

Objectives:

Patch testing is the gold standard for diagnosing allergic contact dermatitis, yet visual grading of reactions by International Contact Dermatitis Research Group (ICDRG) criteria is subjective and particularly challenging in skin of color. 3D stereophotogrammetry offers objective measurements of lesion morphology but its utility in patch test grading has not been studied.¹ We evaluated whether 3D photography can detect quantitative differences between patch test reaction grades and identified which parameters may offer discriminatory value.

Methods:

A total of 473 patch test reactions of all Fitzpatrick skin types (Normal, n=43; Irritant, n=42; Doubtful, n=170; 1+, n=150; 2+, n=49; 3+, n=19) were imaged using the LifeViz™ Micro stereophotogrammetric system at 96 hours and analyzed with DermaPix software. Extracted parameters included lesion perimeter, surface area (SA), total volume, volume >0, volume <0, diameter, maximum and minimum height, surface roughness ((volume >0)+(volume <0)/SA), average height and average depth. Welch's ANOVA was applied to each parameter, followed by Dunnett's T3 post-hoc comparisons of 1+, 2+, 3+ reactions to normal, doubtful and irritant reactions.

Results:

Welch's ANOVA showed significant differences among grades for all parameters ($p < 0.05$). Pairwise analyses revealed that average height, maximum, volume >0, and roughness consistently distinguished all reaction grades (adjusted p values < 0.02). In contrast, average depth, minimum, and volume <0 contributed little discriminatory value.

Conclusions:

3D photography can detect objective, quantitative differences between patch test reaction grades, independent of color. Maximum height may reflect ICDRG-defined edema/infiltration, while roughness may reflect papulation.

Acknowledgements:

1) Ghalambor T, Hamann C, Hamann D. Enhancing Recognition of Allergic Contact Dermatitis in Skin of Color: A 3D Imaging Approach. *Dermatitis*. 2025 Feb 24. doi: 10.1089/derm.2024.0381. Epub ahead of print. PMID: 39994898.

Evaluating the Current Landscape of Contact Dermatitis from At-Home Gel Nail Products: A Cross-Sectional Reddit Survey Study

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Abstract

Objectives:

Allergic contact dermatitis (ACD) from acrylates in gel nail products is a rising public health concern, especially with the surge in at-home kits. Once mainly an occupational issue, ACD now affects everyday consumers due to easy access to unregulated at-home kits containing 2-hydroxyethyl methacrylate (HEMA). The COVID-19 pandemic accelerated at-home use, altering consumer habits and increasing adverse events. While past studies focused on professionals, this study explores risks for at-home users and identifies gaps in awareness and safety.

Methods:

A survey was posted on six Reddit subgroups focused on gel nails or contact dermatitis. Participants answered questions regarding demographics, manicure habits, dermatitis symptoms, allergen knowledge, help-seeking behavior, and financial impact. Associations between awareness, usage, and adverse reactions were analyzed after 8 weeks.

Results:

163 recent at-home gel nail kit users responded, with 54% reporting skin reactions. Most affected were young women and non-nail technicians. Reaction rates increased with usage frequency, reaching 80% in weekly users. Prior allergen awareness was strongly protective—only 36% of aware users had reactions versus 88% unaware ($p < 0.0001$). Most sought advice online. Though kits cost less than salon manicures, users faced extra expenses from treatments or product changes.

Conclusions:

This study underscores a significant, under-recognized public health risk of ACD from at-home gel nail products, emphasizing the importance of consumer awareness and education to reduce adverse reactions. Limitations include reliance on self-reported data, lack of clinical assessment, and possible selection bias, as the survey was distributed on Reddit and may not reflect all user experiences.

Acknowledgements:

I would like to acknowledge my mentor and PI for this project, Dr. Nicole Burkemper, for her guidance and support.

◆ ◆ GENERAL PRESENTATIONS ◆ ◆

Patch Testing with Out-of-Date Haptens: Can We? Should We?

Authors and Affiliations: Rosemary L. Nixon, MD, FACD, FAFEOM, Skin Health Institute

Abstract

Objectives:

Patch test haptens come with expiry dates. But they are expensive. There is little research on the viability of patch test haptens after their expiry dates. Following a critical incident at a major Melbourne hospital where hospital accreditors found some out-of-date haptens in a refrigerator which led to the cessation of patch testing in that hospital, we decided to study this issue further.

Methods:

Out-of-date haptens were donated by several dermatologists. Patients with a positive patch test to in-date haptens were invited to participate in testing of out-of-date haptens on day 2 of testing. Reactions were recorded at day 4 (day 2 for out-of-date haptens) and then patients sent in photos of day 4-5 reactions. Ethics permission was obtained.

Results:

To date, 194 out-of-date haptens have been tested and 136 (70.3%) have been positive. Cobalt, colophonium, fragrance mix 2, p-paraphenylenediamine, methylisothiazolinone, hydroxymethyl acrylate, thiuram-mix were always positive whereas nickel reacted 85%, fragrance mix 1 83%, potassium dichromate 75%. Benzalkonium chloride (tested 3 times) and hydroperoxides of limonene (tested 5 times) did not react. Haptens tested ranged from 2002 to 2018. Most reactions were classed as being the same strength, but 25.6 % were less, 7.2% were greater and 27.6% did not react.

Conclusions:

While we do not at all advocate for patch testing with out-of-date haptens, the results suggest that patch testing with them may be better than not patch testing at all. Perhaps developed countries could donate out-of-date haptens to less privileged countries.

Tunable Microneedle Patches for Targeted Allergen Delivery to Antigen-Presenting Cells

Authors and Affiliations: Dara Bakar, MD, University of Pennsylvania; Zheng-Chi Lee, University of Pennsylvania; Elaine S. Kim, BA, University of Pennsylvania; Spencer C. Tuohy, BSE, UConn School of Medicine; Arben K. Nace, MS, University of Pennsylvania; Leo L. Wang, MD, PhD, FAAD, University of Pennsylvania

Abstract

Objectives:

Current patch testing consists of non-specific topical exposures, resulting in imprecise diffusion across the stratum corneum which often yields both false positives and negatives. We sought to develop tunable microneedle (MN) patches that encapsulate common contact allergens and deliver them to antigen-presenting Langerhans cells (LCs) in the epidermis. We hypothesize that MNs improve dose control, delivery speed, and diagnostic sensitivity and specificity compared to traditional patch testing.

Methods:

We examined the effect of MN length on allergen delivery *in silico*. The heat-mass transfer analogy was applied using the partial differential equation toolbox in MATLAB to model simple diffusion of antigens from the MN surface and characterize the concentration at LC depths. MNs were then fabricated out of polyethylene glycol diacrylate to the optimized specifications and loaded with nickel by swelling in NiSO₄ solution. Release tests were performed in PBS and *ex vivo* on skin sections. Quantification of nickel was done via dimethylglyoxime colorimetry.

Results:

Antigen concentration at LC depth was identified at steady-state for varying MN lengths (100-1000 μm). MATLAB simulation suggested that optimal MN length was in the range of 500-700 μm . The optimized MNs provided superior timing and precision *ex vivo* compared to conventional gel vehicles, releasing sufficient elicitation concentrations of nickel within 0.5 hours.

Conclusions:

Our MN platform offers consistent and precise allergen delivery, meeting the clinical need of a more efficient diagnostic approach for allergic contact dermatitis.

Acknowledgements:

Supported by the American Contact Dermatitis Society Clinical Research Award (2025) and the Pennsylvania Allergy Education Research Fund Grant (2025).

North American Contact Dermatitis Group Patch Test Results: 2023-2024

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Abstract

Objectives:

The North American Contact Dermatitis Group (NACDG) tests patients to a standard series of allergens and reports patch test results every 2 years. These data are for the 2023-2024 cycle.

Methods:

Retrospective review of NACDG patch test results from 2023-2024.

Results:

From 2023-2024, the NACDG tested 3980 patients. The majority of patients were female (74.3%), White (69.9%), and 57.6% were older than 40. The most common primary sites of dermatitis were hand (19.0%), followed by face (17.8%), scattered generalized (16.6%), and eyelids (12.8%). A third of patients had atopic dermatitis. Of tested patients, 70.3% had at least one positive patch test reaction. The top positive allergens were nickel sulfate hexahydrate 5% (26.3%), Methylisothiazolinone 0.2% (9.2%), Cobalt chloride hexahydrate 1.0% (8.8%), Fragrance mix I 8.0% (8.7%), Hydroperoxides of linalool 1.0% (8.6%), Balsam of Peru 25.0% (7.6%), and Methylchloroisothiazolinone/ methylisothiazolinone 0.02% (7.0%). Occupational skin disease was present in 10.6% of patients and the top occupational sources for allergens were gloves and soaps/cleansers. The most common primary diagnoses were allergic contact dermatitis (48.9%), other dermatitis (13.2%), atopic dermatitis (12.5%), and irritant contact dermatitis (11.5%). Of tested patients, 20.1% were positive to an allergen not on the screening series, and of those patients, 11.2% had occupationally relevant allergens.

Conclusions:

Nickel allergy remains common. Methylisothiazolinone allergy continues to decrease in North America. One fifth of patients tested positive to a supplemental allergen not on the screening series. Patch testing with a screening series of allergens is necessary to understand trends in allergen positivity.

Understanding Copositivity Patterns in Acrylate Patch Testing using Hierarchical Clustering from 1997-2024

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Abstract

Objectives:

Acrylate allergy is rising, with many patients showing patch test positivity to multiple acrylates simultaneously. A better understanding of acrylate copositivity can help guide avoidance. We aimed to quantify acrylate copositivity and define subgroups using hierarchical clustering.

Methods:

We conducted a retrospective review of acrylate patch testing at three Mayo Clinic sites (Arizona, Florida, Minnesota) from 1997-2024. Twenty-seven allergens were analyzed; fourteen demonstrated $\geq 1\%$ positivity: 2-hydroxyethyl acrylate (HEA), 2-hydroxyethyl methacrylate (HEMA), 2-hydroxypropyl methacrylate (HPMA), diethylene glycol diacrylate (DEGDA), ethyl acrylate (EA), ethyl cyanoacrylate (ECA), ethyl methacrylate (EMA), ethylene glycol dimethacrylate (EGDMA), methyl methacrylate (MMA), tetraethylene glycol dimethacrylate (TTEGDMA), tetrahydrofurfuryl methacrylate (THFMA), triethylene glycol diacrylate (TEGDA), triethylene glycol dimethacrylate (TREGDMA), and n-butyl acrylate (n-BA). Pairwise copositivity was computed for allergens $>1\%$ positivity, and hierarchical clustering was applied to the copositivity matrix.

Results:

Among 17,148 patients, 90,818 acrylate tests yielded 1,557 positives (1.71%). Most frequent positive reactions were HEA 5.4% (90/1,667), HPMA 5.0% (117/2,342), and HEMA 4.6% (331/7,154). Clustering revealed two general subgroups: Cluster A (HEA, HEMA, HPMA, EGDMA, EMA, DEGDA, TEGDA) and Cluster B (MMA, EA, n-BA, THFMA, TREGDMA, TTEGDMA) with some cross-cluster copositivity. ECA showed relatively minimal copositivity to other acrylates.

Conclusions:

Acrylate allergy is not monomorphic. Copositivity analysis determined two broad subgroups, with more closely related allergens sharing distinct structural similarities. Ethyl cyanoacrylate more independently formed a separate group; a patient allergic to cyanoacrylates will more likely tolerate other acrylates in the clinical setting and vice versa. Limitations include retrospective design and intersite, temporal, and patch test panel variability.

◆ ❖ POSTER PRESENTATIONS ❖ ◆

The "Money Bump": A Novel Form of Occupational Dermatitis in Tattoo Artists

Authors and Affiliations: Jessica Kern, MD, Cleveland Clinic Foundation; Joshua Gallop, MD, Cleveland Clinic; John S. Anthony, MD, Cleveland Clinic

Case Study

Background:

Tattoo artists are routinely exposed to mechanical vibration and repetitive friction from prolonged use of tattoo handpieces. Despite this unique occupational exposure, localized cutaneous reactions in response to instrument's pressure have not been previously reported in the dermatologic or occupational medicine literature, to the best of our knowledge. Repetitive trauma and friction are well-documented causes of lichenified or hyperkeratotic dermatoses in other occupations, yet this phenomenon has not been characterized amongst tattoo artists. We present two cases of tattoo artists who developed nodules at the point of contact between the tattoo pen and their fingers, representing a potentially unrecognized and underreported form of occupational dermatosis.

Case Presentation:

The first patient is a 33-year-old female tattoo artist who presented with a firm nodule on the dorsal aspect of her right third finger, precisely where the tattoo pen rests during work. The second patient is a 40-year-old male tattoo artist with a similar lesion in the same location. Both patients described that such bumps are a common, expected finding among their peers and are colloquially referred to as "money bumps" within the community of tattoo artists. Neither patient reported pain, pruritus, or functional limitation. No other systemic symptoms or similar lesions were identified.

Conclusions:

These cases suggest a novel occupational dermatosis among tattoo artists, likely representing a localized variant of lichen simplex chronicus or pseudo-knuckle pads related to repetitive pressure and vibration. Awareness of this entity may guide ergonomic prevention strategies and prompt further research into its prevalence and pathophysiology.

Pembrolizumab-Induced Stevens-Johnson Syndrome / Toxic Epidermal Necrolysis Overlap Successfully Treated with Upadacitinib

Authors and Affiliations: Lucas Goetz, BS, University of South Dakota; Bo Wang, MD, PhD, FAAD, Avera Medical Group Dermatology Aberdeen

Case Study

Background:

Stevens-Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN) are rare, life-threatening mucocutaneous reactions most often triggered by medications. Immune checkpoint inhibitors such as pembrolizumab are increasingly recognized as uncommon but clinically significant triggers. Management remains challenging, particularly in steroid-refractory cases, and there is growing interest in targeted immunomodulators for severe drug-induced dermatitis. This case describes the successful use of upadacitinib in biopsy-confirmed SJS/TEN overlap associated with pembrolizumab.

Case Presentation:

A 51-year-old male with squamous cell lung carcinoma developed erythematous plaques and early mucosal involvement five days after initiating pembrolizumab. Skin biopsy confirmed SJS/TEN overlap, and the patient was started on high-dose intravenous corticosteroids. Despite treatment, his condition worsened, and he was admitted with a SCORTEN score of 3, corresponding to a ~35% mortality risk. Due to disease progression on steroids, upadacitinib 15 mg daily was initiated. The patient responded with marked improvement, re-epithelialization, and no recurrence on follow-up.

Conclusions:

JAK-STAT signaling plays a significant role in SJS/TEN pathogenesis by activating CD8+ T cells and inducing keratinocyte apoptosis. Early evidence suggests that JAK inhibition may benefit severe drug-induced dermatitis when conventional therapies are insufficient. This case demonstrates the potential use of upadacitinib as a targeted therapy for steroid-refractory SJS/TEN and supports further investigation of JAK inhibitors as adjunctive treatment options for high-risk cutaneous adverse drug reactions.

Sensitization on the Surface: Epoxy and Glove Allergens Causing Occupational Dermatitis in a Young Floor Installer

Authors and Affiliations: Joshua Gallop, MD, Cleveland Clinic; John S. Anthony, MD, Cleveland Clinic

Case Study

Background:

Occupational contact dermatitis is an important cause of morbidity in young adults, particularly in industries involving chemical exposures. Prompt recognition of allergens and occupational triggers is crucial for patient outcomes and prevention of chronic disease. We present a case of a young male with occupational allergic contact dermatitis related to both epoxy flooring components and glove allergens, highlighting the complexity of identifying multiple concurrent sensitizers in the workplace.

Case Presentation:

A 28-year-old male developed diffuse eczematous dermatitis involving the eyelids, extremities, and hands after starting work in his father's company installing terrazzo flooring. Symptoms worsened during workdays and improved after several days away from the workplace. Despite trials of multiple topical therapies, symptoms persisted. A comprehensive occupational history was obtained, and patch testing was performed to standard series and additional epoxy acrylate haptens. The patient had a robust positive reaction to diethylenetriamine 1% petrolatum, a hardener used in epoxy flooring, as well as to Carba mix (3% petrolatum) and Thiuram mix (1% petrolatum), both rubber accelerators commonly present in work gloves. Based on clinical history and patch testing, a diagnosis of occupational allergic contact dermatitis secondary to multiple sensitizers was established.

Conclusions:

This case highlights the importance of detailed occupational history and targeted patch testing in patients with recalcitrant dermatitis. It underscores the potential for concurrent sensitization to both epoxy flooring components and rubber glove accelerators, thereby complicating clinical recognition. Awareness of such occupational hazards is critical to improve the likelihood that a worker's career can be preserved.

Allergic Contact Dermatitis to Gentian Violet in Wound Care Dressing

Authors and Affiliations: Jenna Ruggiero, MD, Medical College of Wisconsin - Milwaukee; Keri S. Chaney, MD, Medical College of Wisconsin

Case Study

Background:

There have been few reports of allergic contact dermatitis to gentian violet despite its widespread use in wound care. We report an interesting case of gentian violet allergy resulting in delayed healing of a chronic lower leg wound.

Case Presentation:

A 54-year-old male presented with a chronic, nonhealing right lower leg wound despite oral antibiotics. On exam, circumferential crusted erosions, fibrinous debris, and background pink plaques with fine scale were noted on the right lower leg. Bacterial tissue culture was obtained and negative. He was started on triamcinolone 0.1% ointment, oral prednisone, and all wound care discontinued given concern for allergic contact dermatitis. He underwent patch testing with the American Contact Dermatitis Society screening series, cosmetic series, as well as his wound care dressings. He was found to have strong (2+) reactions to Balsam of Peru, sorbitan sesquioleate, and his Hydrofera Blue foam dressing. Mild (1+) reactions were found to fragrance mix I, wool alcohol, lauryl glucoside, decyl glucoside and questionable (+/-) reactions to lanolin alcohol and glutaraldehyde. The Hydrofera Blue foam dressing reaction was deemed currently relevant and ingredients included polyurethane, methylene blue, and gentian violet. A positive reaction to gentian violet 1% solution was found on repeated open application test; testing to methylene blue and isocyanates was not performed for the patient's convenience. He markedly improved with three months of allergen avoidance.

Conclusions:

We demonstrate a rare case of allergic contact dermatitis to gentian violet, underscoring the importance of considering patch testing to wound care materials in nonhealing wounds.

Beyond the Itch: Uncovering Disparities in Atopic Dermatitis Testing Practices

Authors and Affiliations: Vivian Le, BA, University of Kansas School of Medicine

Abstract

Objectives:

The clinical course of atopic dermatitis (AD) is frequently complicated by allergic contact dermatitis (ACD). Although patch testing is the gold standard for diagnosing ACD, detailed guidance on its use in AD is limited and largely consensus based. This lack of standardized and validated criteria raises questions about variability in testing practices. This study aimed to characterize demographic and clinical features of the AD population to identify factors influencing the use of patch testing.

Methods:

This single-center retrospective review included patients with a new diagnosis of AD between June 2024 and June 2025. Age, sex, race, insurance status, and comorbid atopic conditions were compared between patients who received patch testing and those who did not using chi-square and t-tests. Logistic regression was performed to determine odds ratios.

Results:

Of 359 patients with AD, 39 (10.9%) underwent patch testing. On bivariate analysis, Patch testing was more common among female ($p=0.0007$), older ($p<0.001$), and White patients ($p=0.041$). After adjusting for demographic and clinical factors, female patients were 3.4 times more likely to receive patch testing ($p<0.001$), and each additional year of age increased odds by 4% ($p=0.01$). Patients with commercial insurance were also 3.1 times more likely to undergo patch testing ($p<0.001$), while race and number of comorbid atopic conditions were not independently associated.

Conclusions:

Patch testing in AD remains inconsistent, reflecting the absence of standardized guidelines. Recognizing these disparities in testing may help optimize clinical decision-making and improve management of affected patients. Further insights are anticipated with expansion of study size.

Flair Up or Flare Up: Prevalence of Common Contact Allergens in Body Glitter

Authors and Affiliations: Andrew S. Williams, MS, Massachusetts General Hospital; Kyle Mueller, BA, Massachusetts General Hospital; Justin L. Jia, MD, Massachusetts General Hospital - Brigham; John Trinidad, MD, MPH, Massachusetts General Hospital

Abstract

Objectives:

Body glitter is a popular cosmetic accessory among partygoers and attendees at large public events such as music festivals and LGBTQ+/SGM Pride celebrations. Body glitter use may expose individuals to allergens and provide opportunities for sensitization, resulting in a higher risk of developing contact dermatitis. Presently, there is minimal research on the safety of body glitters and their potential allergens. In this study, we sought to collate and systematically assess ingredient data of popular glitters from various retailers, screening each for common contact allergens.

Methods:

We compiled a list of "body glitters" from the websites of large cosmetic retailers, including Amazon, JC Penny, Sally Beauty, Sephora, Spirit Halloween, Target, Ulta Beauty, and Walmart. Results were sorted by "Best Selling," and the top products with ingredients listed were included, at a maximum of 10 products per retailer. We collated product names, brands, and individual ingredients. Finally, we cross-referenced the ingredients to allergens listed in the 2020 American Contact Dermatitis Society Core Allergen Series.

Results:

Out of 40 products, 23 (58%) contained allergens, with an average of 2.2 allergens per allergen-containing product. The most common allergens were phenoxyethanol, in 17 (43%) products, and ethylhexylglycerin, in 10 (25%)-both used as preservatives in cosmetic formulations.

Conclusions:

Many commercially available body glitters contain common contact allergens such as preservatives. It is important for users to be aware that these products may contain allergens and for providers to consider body glitter as a trigger of contact dermatitis.

Recognizing Common Allergens Across Diverse Skin Tones

Authors and Affiliations: Lily J. Buckner, McGovern Medical School at UTHealth; Megan Rogge, MD, UT Texas Medical Center at Houston; Ritesh V. Soule, BA, McGovern Medical School at UTHealth

Abstract

Objectives:

Although prevalence of Allergic Contact Dermatitis (ACD) is estimated to be similar across racial and ethnic groups, patients with skin of color (SOC) are less likely to receive a diagnosis of ACD. This disparity may reflect limited data on skin patch testing (SPT) results among SOC patients. This study aims to report SPT results across diverse skin tones to identify common allergens among SOC groups, raising awareness and enhancing diagnosis of ACD in this population.

Methods:

This retrospective and prospective study combines pediatric and adult patients undergoing SPT at UT Physicians Dermatology (May 2021-present). Collected variables include demographics, self-reported race, atopic history, dermatitis characteristics, and SPT results, recorded in REDCap. SOC was defined as non-White individuals, including patients with African, Asian, Native American, Middle Eastern and Hispanic backgrounds. Positive reactions on SPT were defined as +, ++, or +++ at 72 or 96 hours.

Results:

One-hundred patients have been recorded thus far (49 White, 51 SOC). In White patients, the most common allergens with positive reactions on SPT were gold (7, 14%), propolis (6, 12%), nickel (6, 12%), and formaldehyde (6, 12%). In SOC patients, the most common allergens with positive reactions were nickel (8, 16%), propolis (4, 8%), fragrance mix (4, 8%), and neomycin (4, 8%).

Conclusions:

Preliminary findings reveal differences in the most common allergens among White and SOC patients who underwent SPT. Ongoing data collection will determine whether these trends reach significance. Raising awareness of these differences can raise clinical suspicion and improve diagnostic accuracy of ACD in SOC patients.

Is There Cross-Reactivity Between Carba Mix and Iodopropynyl Butylcarbamate?

Authors and Affiliations: Katherine Lee, MD, Park Nicollet Contact Dermatitis Clinic, Minneapolis, MN

Abstract

Objectives:

The potential for cross-reactivity between patch test substances carba mix and iodopropynyl butylcarbamate (IPBC) remains uncertain. Although carbamate-class rubber accelerators and the preservative IPBC both contain carbamyl functional groups, their structures and applications differ significantly. This study aimed to examine possible cross-reactivity between carba mix and IPBC.

Methods:

A cohort of patients allergic to either carba mix or IPBC was identified from a database of 2,830 individuals patch tested at Park Nicollet Contact Dermatitis Clinic between 2020 and 2025. Patients were classified as "allergic" if they demonstrated a doubtful or greater reaction to carba mix (n=128), or a mild (1+) or greater reaction to IPBC (n=57); doubtful reactions were excluded for IPBC given the observed irritant potential by the authors. Cross-reactivity was evaluated by calculating the percentage of patients allergic to both allergens relative to the total number of patients allergic to each. Cross-reactivity was defined as a >10% incidence of concomitant reactions, and statistical significance was determined using Fisher's exact test.

Results:

Cross-reactivity to IPBC was observed in 4.7% of carba mix-allergic patients and 10.5% of IPBC-allergic patients. While the latter exceeded the >10% threshold for cross-reactivity, the association was not statistically significant.

Conclusions:

Cross-reactivity between carba mix and IPBC was demonstrated in approximately one in ten patients allergic to IPBC. In patients allergic to carba mix, only 4.7% reacted to IPBC; therefore, counseling these patients to avoid IPBC is likely unnecessary. IPBC-allergic patients not tested to carba mix may benefit from counseling on avoidance of rubber-accelerators in the relevant clinical context.

An Esthetician with Sensitization to Multiple Cross-Reacting Dyes

Authors and Affiliations: Olivia Lawson, MD, Cleveland Clinic Foundation; John S. Anthony, MD, Cleveland Clinic

Case Study

Background:

Allergic contact dermatitis to oxidative hair dyes is common and reports of complications to their use as eyebrow tints are increasing. We present a case of an esthetician with sensitization to multiple cross-reacting dyes.

Case Presentation:

A 23 year-old female esthetician presented for patch testing after developing a profound allergic contact dermatitis to an eyebrow tint, resulting in acute eczematous dermatitis and facial edema, but without anaphylaxis. Previously, she developed a severe allergic contact dermatitis to a temporary henna tattoo on the forearm 10 years prior. She was patch tested to a standard series tray, plus additional oxidative hair dyes. The results of her patch testing showed exuberant 3+ positivity to 6 of the tested permanent hair dyes including 4-phenylenediamine, p-toluenediamine sulfate, 3-aminophenol, p-aminophenol, p-toluenediamine, toluene-2,5-diamine, in addition to nickel, 2-hydroxyethyl methacrylate, fragrance mix I, and cinnamic aldehyde. Given that the patient works as an esthetician it was deemed safe for her to continue exposure to these dyes at work as long as she wear the appropriate personal protective equipment and strictly avoids personal use of the dyes.

Conclusions:

Consonant with previous reports, it is likely that the previous exposure and reaction to henna dye was her initial sensitization event. Years after the initial sensitization, repeated exposures resulted in additional allergies, likely a combination of cross-reactions and co-reactions to these varying dyes.

Acknowledgements:

Dr. John Anthony, Cleveland Clinic Dermatology

- *Withdrawn* -

Clinical Characteristics of Atopic Dermatitis in the Elderly

Authors and Affiliations: Anita A. Arthur, MD, MPH, University of Florida; Arthur M. Samia, MD, University of Florida; Michaela Rechdan, University of Florida; Mary Bohannon, MHS, University of Florida; Marjorie Montanez-Wiscovich, MD, PhD, University of Florida

Abstract

Objectives:

To characterize demographics, clinical features, comorbidities, and skin barrier function in elderly patients with AD compared to healthy elderly controls.

Methods:

Twenty-six subjects aged ≥ 60 years were recruited for the study. Participants included 13 patients with AD onset after age 60 and 13 age-matched controls. Demographics, clinical history, and comorbidities were obtained through structured interviews and chart review. Disease severity was assessed with the Patient-Oriented Eczema Measure (POEM), Eczema Area and Severity Index (EASI), and pruritus Numeric Rating Scale. Quality of life and mood were evaluated with the Dermatology Life Quality Index (DLQI) and Geriatric Depression Scale (GDS). Transepidermal water loss (TEWL) was also obtained from the volar forearm.

Results:

Males comprised 57.7% of participants and were more prevalent in the AD group (76.9%). AD patients' mean age was 70.6 ± 7.1 years. Pruritus (92.3%) and sleep disturbance (76.9%) were most common, while burning (30.8%) and bleeding (7.7%) were less frequent. Commonly affected sites included the upper extremity (100%), trunk (92.3%), and lower extremities (69.2%). Allergic rhinitis was present in 69.2% and drug allergies in 38.5%. Mean EASI score was higher in AD patients (9.93) than controls (0.12, $p < 0.0001$). TEWL was elevated in AD patients but not statistically significant ($p = 0.0908$).

Conclusions:

AD in the elderly demonstrates distinct symptoms, comorbidity burden, and variable TEWL elevation, supporting age-specific diagnostic and management strategies.

A Novel In-Vivo Approach to Metal Sensitivity Testing for Surgical Implants: A Case Report

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Case Study

Background:

Metal testing for surgical implants is often debated, with unclear correlates between cutaneous sensitivity and in-vivo reactions. Since titanium implant allergies have rarely been reported, titanium is frequently substituted in place of chromium and cobalt in metal-sensitive patients. This case presents a novel approach to pre-operative planning in patients with positive cutaneous reactivity to metals.

Case Presentation:

A 29-year-old female with a history of rashes to jewelry and severe thoracolumbar scoliosis presented for patch testing prior to spinal repair. She was tested for cobalt(II)chloride hexahydrate, titanium(III)nitride, titanium(IV)oxalate hydrate, and potassium dichromate. She had reactions to cobalt(II)chloride hexahydrate (3+), potassium dichromate (1+), and titanium salts (+/-) on day 4, which persisted on day 7.

Given the doubtful reactions to titanium, repeat testing to titanium(III)nitride and titanium(IV)oxalate hydrate was performed on the patient's back, arm, and thigh, all resulting in a 1+ reaction (day 7) to both formulations. With no alternative metal options, an in-vivo test was conducted by implanting a percutaneous titanium-only fiducial screw in her T10 spinous process. After three months without complications or rash, the screw was removed and the patient underwent spinal repair with all titanium instrumentation. To date, the patient demonstrates no cutaneous or implant-related complications, but long term results will need to be monitored.

Conclusions:

While patch testing continues to be the first line diagnostic tool for metal sensitivity, this case presents a novel in-vivo method in the setting of limited alternative materials.

A Case Report of Allergic Contact Dermatitis to Unna Boots

Authors and Affiliations: Leon Zheng, BA, UVA School of Medicine; Emily Tocco, BS, UVA School of Medicine; Peter Jowdy, MD, University of Virginia Dermatology; Barrett Zlotoff, MD, University of Virginia Dermatology

Case Study

Background:

The Unna boot is a zinc oxide, impregnated gauze bandage used to provide semi-rigid compression for venous leg ulcers. While preservative-free formulations are available, commercial versions may contain preservatives. Allergic contact dermatitis (ACD) is a rarely documented complication of Unna boot use.

Case Presentation:

A 60-year-old male with a past medical history of type II diabetes presented with non-healing wounds on the lower legs which were managed with weekly Unna boot therapy, applied over paraben/preservative-free petroleum jelly. No other medicated products were applied beneath the boots. At 3-week follow-up, he had a worsening pruritic eruption of the lower legs.

Physical exam showed well-demarcated erythema with desquamation in the distribution of the Unna boots without purulence, odor, or edema. Review of the Unna boot ingredients revealed methyl, ethyl, propyl, and butyl parabens. ACD secondary to paraben-containing Unna boot therapy was suspected. The boots were removed, and an oral prednisone taper was initiated with loose gauze and petroleum jelly.

Patient's ACD resolved completely with the oral prednisone taper. Follow-up patch testing demonstrated strong (3+) positive reactions to parabens and quaternium-15, supporting the suspected diagnosis of paraben-induced ACD to his Unna boot. Primer-modified Unna boots, formulated to exclude parabens and preservatives, were recommended for future compression therapy needs.

Conclusions:

Paraben-induced allergic contact dermatitis from Unna boots represents an underreported cause of contact allergy. Increased awareness of this potential reaction and careful review of Unna boot ingredients are essential to prevent and identify cases of ACD in patients requiring Unna boot therapy.

Dermatologic Reactions to Trending Anti-Aging Cosmeceuticals: A Literature Review

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Abstract

Objectives:

To evaluate the dermatologic safety profiles of popular anti-aging cosmeceutical ingredients frequently promoted on social media, with a focus on irritant and allergic cutaneous reactions.

Methods:

A social media scan of Instagram, TikTok, and YouTube identified the 17 most frequently referenced anti-aging ingredients. A PubMed search (2000-2025) was then conducted for each ingredient combined with terms such as "contact dermatitis" and "skin irritation." Human studies, case reports, clinical trials, systematic reviews, and patch test data reporting irritant contact dermatitis (ICD), allergic contact dermatitis (ACD), or other dermatologic adverse events were included. Animal-only studies and non-dermatologic outcomes were excluded. A total of 64 studies met inclusion criteria.

Results:

ICD was reported in 50% (32/64) of included studies and ACD in 34% (22/64). Retinol was most frequently associated with ICD, particularly in higher Fitzpatrick skin types, while ACD to retinol was uncommon. Certain vitamin C derivatives (3-O-ethyl-L-ascorbic acid) were linked to ACD. Niacinamide was generally well tolerated, with occasional mild irritation at high concentrations. Bakuchiol demonstrated rare ACD without notable irritancy. Peptides, exosomes, squalane, polyglutamic acid, and topical melatonin showed favorable tolerability. Isolated ACD cases were reported with resveratrol, Centella asiatica, and thiamidol.

Conclusions:

Many trending anti-aging cosmeceuticals are well tolerated; however, ingredient-specific risks for ICD and ACD exist. Clinicians should promote evidence-based product selection and monitor for early dermatologic reactions as consumer use continues to expand.

Nickel, Fragrance, and Preservative Sensitization from Maternity Support Products and Monitoring Devices

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Abstract

Objectives:

To evaluate the clinical relevance of common sensitizers, including nickel, fragrance mix components, methylisothiazolinone (MI), and methylchloroisothiazolinone (MCI), in maternity support products and hospital-based monitoring devices.

Methods:

A cross-sectional analysis of 30 maternity support items and clinical fetal monitoring tools was performed. Product labeling was reviewed for disclosure compliance with FDA and EU cosmetic standards.

Results:

Nickel release was detected in tested monitoring electrodes and adjustable belt clasps. Fragrance compounds, including limonene and linalool, were found in support creams and adhesive patches labeled "hypoallergenic." MI/MCI residues were identified in foam or gel-backed sensors. None of the hospital devices listed allergen content, and consumer maternity products used ambiguous "dermatologist tested" claims without ingredient transparency. Cases of dermatitis localized to monitoring or belt contact areas were consistent with allergen exposure patterns.

Conclusions:

Maternity support and monitoring products represent a source of sensitizer exposure in pregnant individuals. Regulation of material disclosure, substitution of allergen-free components, pre-market dermatologic evaluation, and incorporating patch test-guided standards into device certification could significantly reduce pregnancy-associated ACD and improve maternal dermatologic safety.

Acknowledgements:

The authors have no conflicts of interest to disclose.

Review of Allergic Contact Dermatitis to Intracardiac Devices

Authors and Affiliations: Kayla Tran, BA, VCU School of Medicine; JiaDe Yu, MD, MS, Virginia Commonwealth University; Amber R. Atwater, MD, Distinctive Dermatology

Abstract

Objectives:

This study aims to provide a comprehensive review of the reported cases of allergic contact dermatitis to intracardiac devices, focusing on clinical presentation, implicated allergens, diagnostic work up, and management.

Methods:

A review of published reports involving hypersensitivity reactions after intracardiac devices implantation were identified on PubMed. We define intracardiac devices here as any device with a component implanted directly into the heart chambers or onto the epicardium of the heart.

Results:

A total of 589 case reports of hypersensitivity to implantable cardiac devices (36 reports related to pacemaker, 7 ICD-related, 14 cardiac closure devices related, and 1 LVAD case) were identified in the literature. Time to symptom onset was variable. Common presentations included localized dermatitis, implant site erythema, edema, and pruritus with very few cases reporting systemic symptoms. Interestingly, most hypersensitivity reactions to cardiac closure devices have presented as chest pain and/or migraine headaches, but there were a few cases of patients presenting with generalized exanthema. Nickel, titanium, cobalt, and silicone were the most frequently implicated allergens. In some cases, despite a negative patch test, clinical suspicion remained high. Management strategies included topical and systemic corticosteroids, device explantation, and/or replacement with an alternative device excluding the suspected allergen. Symptoms resolved in all reported cases of device explantation, supporting hypersensitivity as the underlying cause.

Conclusions:

Though rare, allergic contact dermatitis to intracardiac devices can be clinically significant. Early suspicion, appropriate diagnostic testing, and use of alternative biocompatible material in individuals with a known allergy are key to effective management and prevention of further complication.

"Chat, is this Product Safe for Me?" Comparing Product Recommendations from Artificial Intelligence to the Contact Allergen Management Program Database

Authors and Affiliations: Elise B. Fournier, BS, Loyola University Chicago; Nicole E. Chin, BA, Loyola Stritch School of Medicine; Andrew J. Scheman, MD, Northwestern University; Walter Liszewski, MD, Northwestern University

Abstract

Objectives:

The Contact Allergen Management Program (CAMP) by the ACDS remains the U.S. gold standard for identifying safe alternative products in allergic contact dermatitis but is clinician-facing and requires access codes. As patients increasingly seek advice from artificial intelligence (AI) tools such as ChatGPT and Google Gemini, the accuracy of AI-generated recommendations for allergen avoidance warrants evaluation. This study assessed the reliability of AI product lists compared with CAMP, focusing on allergens requiring less intuitive label reading.

Methods:

We hypothesized that AI platforms are unreliable for identifying allergen-safe products. Standardized prompts were developed (e.g., "list 40 shampoos safe for dimethylaminopropylamine [DMAPA] allergy"). ChatGPT (Model 5) and Google Gemini (Model 2.5 Flash) were queried in a private browser. Allergen groups included non-intuitive (DMAPA/betaines, formaldehyde releasers) and intuitive (isothiazolinones, benzoates) categories. Outputs were reviewed for ingredient accuracy and compared to CAMP. Performance was measured by the proportion of AI-recommended products free from the relevant allergen and overlap with CAMP. Both models were also tested on ingredient list interpretation.

Results:

Accuracy varied by allergen. For DMAPA, ChatGPT listed 16 products (5 safe) and Gemini 40 (16 safe). Both flagged unsafe products when given ingredient lists but performed poorly with non-intuitive allergens. Gemini generally outperformed ChatGPT for intuitive categories.

Conclusions:

AI platforms provide rapid, patient-facing suggestions but remain unreliable for complex allergen avoidance. Dermatologists should reinforce CAMP as the validated resource.

Ultraviolet Nail Lamps: Assessing Exposure, Safety, and Dermatologic Risk

Authors and Affiliations: Rachel Fulton, MD, Thomas Jefferson; Julianna Tolotta, BS, Thomas Jefferson; Shady Mina, BS, Thomas Jefferson; Sherry Yang, MD, Thomas Jefferson; Anthony A. Gaspari, MD, Thomas Jefferson

Abstract

Objectives:

Nearly 90% of nail salons use UV lamps for curing of gel nails. This narrative review evaluated evidence linking UV lamp exposure to skin carcinogenesis and the risk of allergic or irritant contact dermatitis from acrylic and gel applications, emphasizing how the nail unit's unique microenvironment influences responses to UV exposure and acrylate contact.

Methods:

A PubMed literature review identified peer-reviewed studies on UV lamp exposure and skin cancer risk. Data from occupational exposure frameworks (ACGIH, ICNIRP, CIE), UVA dose modeling, case reports, and in vitro studies were synthesized to assess carcinogenic potential across lamp types.

Results:

In vitro studies on human and murine cells show DNA damage and mitochondrial dysfunction, but the absence of stratum corneum in these models limits their relevance. Current clinical evidence remains limited to case reports with confounding factors. Evidence on UVA's effect on acrylate sensitization is scarce; it is unclear whether polymerization reduces allergenicity or promotes new photochemical reactions.

Conclusions:

Data remain inconclusive regarding UV lamp carcinogenicity. However, combined photoexposure and acrylate sensitization risks underscore broader dermatologic concerns, highlighting the need for further investigation into UVA-acrylate interactions and the absence of defined dose-response thresholds for UVA-induced carcinogenesis.

Acknowledgements:

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Analysis of Inactive Ingredients and Potential Allergens in Topical Corticosteroid Formulations

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Abstract

Objectives:

Allergic contact dermatitis (ACD) is a potential adverse effect of topical corticosteroids. While ACD to active ingredients may occur, inactive ingredients in steroid preparations are also important to evaluate. Our objective is to catalogue inactive ingredients across topical corticosteroid formulations and identify potential allergens.

Methods:

Various corticosteroids were searched in September-October 2025 on DailyMed.nlm.nih.gov. Inactive ingredients were analyzed for allergenicity based on the American Contact Dermatitis Society (ACDS) Core and North American Contact Dermatitis Group (NACDG) screening series (including known cross-reactors). Exclusion criteria included animal products, steroids compounded with another active ingredient, repackaged/archived labels, and over the counter preparations.

Results:

358 unique topical corticosteroids in eight different vehicles were identified. 20 unique ACDS/NACDG allergens were identified with an average of 1.77 ACDS and 1.30 NACDG allergens per product. The corticosteroids with the highest number of allergens include hydrocortisone valerate (3.14 ACDS allergens/product, 2.14 NACDG allergens/product) and hydrocortisone acetate (2.85, 2.15), while desoximetasone had the lowest (0.65, 0.35). Products with bases of foams (3.10, 2.20) and creams (2.80, 1.83) contained the highest number of allergens. The most common allergens identified were propylene glycol (57.4% of products), cetyl stearyl alcohol (42.9%), and sorbitan sesquioleate (28.7%).

Conclusions:

Inactive ingredients in topical corticosteroids include known contact allergens - with significant variation across steroid classes and vehicle types. Further awareness of allergen prevalence among topical corticosteroids may guide safer prescribing practices and improve patient outcomes.

Patch Test Positivity Differs Across Fitzpatrick Skin Types

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Abstract

Objectives:

The North American standard series for patch testing (PT) may overlook exposures common in populations with darker Fitzpatrick skin types (FST). Because allergen exposure varies with occupational, cultural, and socioeconomic factors, standard panels may miss relevant sensitizers. Our objective was to assess the consistency of PT positivity across different FST categories.

Methods:

We analyzed results from our prospective clinical trial of community participants in Jacksonville, FL (NCT06387472). Ten allergens from the North American Contact Dermatitis Group (NACDG) standard series were selected based on prevalence. Participants underwent in-person assessments at three visits, with final reading performed by a board-certified dermatologist experienced in PT. Associations between FST and any positive reaction were evaluated using logistic regression.

Results:

141 participants (mean age 44 years; 73% female; 37% FST IV-VI, 24% Hispanic or Latino) completed the study. Of 1,410 test sites, 163 showed positive allergic contact dermatitis reactions. 66% participants experienced one or more reactions, most commonly to propolis (49%), nickel (18%), benzoic acid (13%), and balsam of Peru (12%). Participants with FST I-III were almost three times more likely to have at least one positive reaction than those with FST IV-VI (OR = 2.82, 95% CI:1.37-5.89, P=0.005).

Conclusions:

Reactivity rates differed significantly across skin types. It is plausible variations in product use, cultural customs, and environmental exposures may contribute. Current standard panels may not adequately address allergen risk profiles of darker FST patients. Tailored testing and further research are needed to improve equity and outcomes in PT.

Just Released - Formaldehyde Detected in Skin Glues by Chromotropic Acid Testing

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Abstract

Objectives:

Topical cyanoacrylate-based adhesives are popular for skin closures in surgery and are also used at home to close small cuts and wounds. Cyanoacrylates in glues are known to degrade and release formaldehyde, potentially contributing to formaldehyde-related allergic contact dermatitis. A recent study reported formaldehyde release from 51.4% of tested eyelash glues via chromotropic acid testing. Given no studies to date have assessed skin glues specifically, we tested surgical skin glues and over-the-counter (OTC) glues frequently used for skin closure in the United States for formaldehyde release using the chromotropic acid method.

Methods:

Fifteen skin glues (five surgical glues, ten OTC glues) available within the United States were evaluated for formaldehyde release via the chromotropic acid method.

Results:

66.7% of the tested skin glues (nine OTC glues, one surgical glue) demonstrated formaldehyde release during chromotropic acid testing.

Conclusions:

Cyanoacrylate-based glues used for skin closure represent a significant source of formaldehyde exposure, particularly those available for purchase over-the-counter. Formaldehyde release may be a result of undeclared use of this allergen by manufactures or degradation of cyanoacrylates into this by-product. Patients and physicians should be advised that both surgical and OTC skin glues can be sources of formaldehyde that contribute to allergic contact dermatitis.

Acknowledgements:

We would like to extend our gratitude to Javed Shaik, PhD for providing laboratory facilities and equipment to perform chromotropic acid testing.

Racial Disparities in Dupilumab Prescription Among Patients with Atopic Dermatitis: A TriNetX Study

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Abstract

Objectives:

To evaluate demographic differences in dupilumab prescribing for Atopic Dermatitis (AD), by comparing patients prescribed dupilumab vs those who were not, using a large, multi-institutional database.

Methods:

We conducted a retrospective cohort study using the TriNetX Research Network within one healthcare network, including individuals of all ages with a diagnosis of AD (ICD-10 L20) with at least one visit after January 1, 2000. The outcome was a documented prescription of dupilumab. Demographics including age, sex, and race were compared using descriptive statistics and p-values for group differences.

Results:

Among 54,990 patients with AD, 4,340 (7.9%) were prescribed dupilumab. Dupilumab users were older than non-users (mean age 42.5 vs. 29.7 years; $p < 0.0001$). Sex distribution was similar between groups (female: 55% vs. 54%; $p = 0.23$). Asian patients were significantly more likely to be prescribed dupilumab (10.8% vs. 7.2%; $p < 0.0001$), while proportions of White (33.9% vs. 32.6%) and Black (15.0% vs. 13.5%) patients did not differ significantly. Smaller, yet statistically significant differences were seen among American Indian/Alaska Native (0.5% vs. 0.2%; $p = 0.0050$) and Native Hawaiian/Other Pacific Islander (0.5% vs. 0.8%; $p = 0.0313$) groups having lower dupilumab prescription rates.

Conclusions:

Preliminary findings suggest race and age-related disparities in dupilumab prescribing for AD, with greater utilization among Asian and older patients. Given the higher prevalence of AD in minority populations, these results emphasize the need for equitable prescribing practices of dupilumab and investigation of contributing factors. Ongoing analyses using larger datasets will assess trends across newer approved biologics for AD and whether these disparities persist after adjusting for comorbidities and distribution.

Nickel-Releasing Nail Charms Complicating Acrylate Allergic Contact Dermatitis

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Case Study

Background:

Nickel and acrylate allergies are among the most common causes of allergic contact dermatitis (ACD) (1,2). Here, we present a unique case of co-exposure to acrylate and nickel allergens in acrylic nails and nickel nail charms.

Case Presentation:

A 21-year-old non-atopic female presented for a 3-year intermittent eruption of vesicles and pustules involving her bilateral ears, eyelids, lips, and fingers. With her most recent flare, she had associated ear and eyelid edema with crusting of the eyelashes. Family history was positive for atopy. Patient had poor control with desonide 0.05% cream, triamcinolone 0.1% cream, clobetasol 0.05% cream, ketoconazole 2% shampoo, and tapinarof 1% cream.

Patch testing yielded the following results: 2-Hydroxyethyl methacrylate (1+), Ethyl acrylate (1+), Disperse orange (2+), Disperse yellow (+/-), Nickel (2+), Nickel T.R.U.E. Test (1+), PPD T.R.U.E. Test (1+), Formaldehyde (IR), Cocamidopropyl betaine (+/-), Dimethylaminopropylamine (+/-) (Fig. 1). The patient reported frequently wearing acrylic nails (Fig. 2). Nickel dimethylglyoxime spot test applied to her nail charms demonstrated nickel release (Fig. 3). The patient was counseled on avoidance of allergens and was continued on her current treatment regimen.

Conclusions:

Co-sensitization of acrylates and nickel has been reported in cases of exposure to metallic nail polishes (3,4). Here, we report a case of ACD related to nickel release from metal nail charms. Patch testing physicians should be aware that this new nail art trend may be a source of exposure to nickel for some patients.

Acknowledgements:

Thanks to Dr. Hamann for his passionate teaching and support.

Enhancing Clinician Confidence in Patch Test Interpretation for Skin of Color: Impact of a Targeted Educational Module

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Abstract

Objectives:

Patients with skin of color (SOC) face higher risk for delayed or missed diagnoses of allergic contact dermatitis. We hypothesize that underrepresentation of SOC in dermatology education and challenges interpreting patch test reactions may contribute to this risk. We assessed baseline training, confidence, and perceived challenges in interpreting patch tests in SOC and piloted a brief web-based educational resource addressing these gaps.

Methods:

A cross-sectional survey of 40 dermatology trainees and clinicians assessed prior training, confidence in interpreting patch tests overall and in SOC patients, and knowledge of SOC-specific reaction types. Participants then completed a web-based module with a visual handout and slides showing patch test reactions in SOC, including interpretation techniques and common allergens. Post-intervention surveys measured changes in confidence and knowledge.

Results:

Most respondents agreed that interpreting patch tests is more challenging in SOC, with 35% strongly agreeing and 42.5% agreeing. Prior training was limited: 27.5% reported none, 57.5% reported 1-5 hours, and 15% reported >6 hours. Confidence in interpreting SOC patch tests increased from 3.13/5 to 4.03/5 after the module. Knowledge of SOC reaction types improved from 22/40 (55%) to 33/40 (82%), and recognition of erythema variations rose from 14/40 (35%) to 23/40 (57.5%). Feedback emphasized the need for more SOC-focused training and guidance on subtle reaction patterns.

Conclusions:

Limited SOC-specific training may contribute to clinician uncertainty in patch test interpretation. A brief web-based module appeared to improve confidence and knowledge, supporting the value of targeted, inclusive resources in reducing diagnostic disparities in dermatology.

Fifteen Years Later, New Data on Propylene Glycol Concentration and the Balance Between Sensitivity and Specificity in Patch Testing

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Abstract

Objectives:

For more than a decade, contact dermatitis specialists have debated the optimal test concentration for propylene glycol (PG): should patch testing favor lower concentrations to minimize irritancy, or higher concentrations to capture clinically relevant allergy? Fifteen years after this question was first raised, new data provide clarity.

Methods:

This project was a retrospective cross-sectional multicenter analysis of 36,390 patients who were patch-tested by the NACDG over the period of 2007-2022. Data included demographics, dermatitis sites, patch test reactions, allergens and their respective clinical/occupational relevance, and sources of exposure.

Results:

Allergic reaction rates increased from 2.5% to 3.4% with increasing PG concentration within the cohort of patients who were tested at both 30% and 100% PG. Reactions that were considered to be definitely clinically relevant made up 12.2% of allergic reactions to PG 30% and only 6.3% to PG 100%. The proportion of single PG reactors was also significantly lower (2.1% vs 16.6%) compared to our previous findings. Additionally, there was an increase in source code associations with topical medications at higher PG concentrations (31% vs 41.9%), followed by personal care products (50.2% vs 33.6%).

Conclusions:

Our data reveal that higher concentrations of PG appear to increase the overall yield of positive reactions but also shift the pattern of relevance - reducing non-specific or cosmetic-associated single reactors while uncovering a greater proportion of medicament-related sensitizations, particularly to topical corticosteroids. These findings suggest that higher PG concentrations enhance diagnostic sensitivity without a corresponding rise in spurious irritant reactions.

Acknowledgements:

NACDG

The Financial Impact of Allergen Avoidance Among Patch-Tested Patients

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Abstract

Objectives:

Patch testing serves as the most effective test in diagnosing allergic contact dermatitis (ACD) and providing guidance on allergen avoidance. Previous studies have assessed the financial impacts associated with patch test visits, prescriptions, unemployment benefits and sick leave use associated with ACD. However, no studies have examined patient-level costs of following allergen avoidance recommendations after patch testing. This study seeks to evaluate the financial impact of allergen avoidance by quantifying the non-recoverable cost of discarding allergen-containing products after patch testing, in a cohort of patients from a single patch testing center.

Methods:

Personal products of patients (n=53) diagnosed with ACD were documented and categorized as "allergen-free" or "allergen-containing" based upon patch test results. The prices of allergen-containing personal products were estimated by conducting an online search, and results were summarized using descriptive statistics.

Results:

Non-recoverable cost associated with allergen avoidance ranged from \$9.04 to \$1134.25 with a mean of \$286.28 and standard deviation of \$316.69. The proportion of patients across cost tiers was 62.3% (\$0-249.99), 20.8% (\$250-499.99), 5.67% (\$500-749.99), 5.67% (\$750-999.99), and 5.67% (\geq \$1000).

Conclusions:

We present the first study to examine the financial impact associated with the non-recoverable cost of allergen avoidance in patients diagnosed with ACD. Allergen avoidance can pose significant financial burden to patients. Patch-testing dermatologists should consider the financial impact of allergen avoidance when counseling patients.

Systemic Nickel Allergy Presenting as Recalcitrant Prurigo Nodularis: A Case Report

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Case Study

Background:

Prurigo nodularis (PN) is a chronic, intensely pruritic dermatosis with multifactorial etiologies, often posing significant therapeutic challenges. Systemic contact dermatitis (SCD) due to dietary metal allergens such as nickel is uncommon and underrecognized cause of chronic pruritic disorders. Identifying SCD can be crucial in patients with longstanding, treatment-resistant PN.

Case Presentation:

A 30-year-old Filipino woman presented with a 16-year history of recalcitrant PN characterized as generalized multiple erythematous and hyperpigmented nodules accompanied by severe pruritus. Laboratory investigations and imaging revealed no significant abnormalities. The condition persisted despite multiple treatment modalities including potent topical and intralesional corticosteroid, phototherapy, and systemic immunosuppressants until patch testing was done, demonstrating a strong (+++) reaction to nickel sulfate, suggesting systemic nickel hypersensitivity. Institution of a low-nickel diet led to a marked reduction in pruritus and a gradual regression of nodules within weeks, confirming systemic contact dermatitis secondary to nickel exposure.

Conclusions:

This case underscores the importance of considering systemic nickel allergy in patients with chronic, refractory PN. Patch testing and dietary evaluation can uncover overlooked causes, allowing for targeted, non-immunosuppressive management. To our knowledge, this represents one of the first well-documented cases of generalized PN attributable to systemic nickel allergy and the first reported from the Filipino population. Awareness of SCD as a potential etiology broadens the diagnostic perspective for chronic pruritic dermatoses, preventing unnecessary long-term immunosuppression and improving patient outcomes. Further studies are warranted to clarify diagnostic criteria and establish standardized management strategies for systemic contact dermatitis.

Nickel and Polymer Allergens in Remote Work Environments

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Abstract

Objectives:

To evaluate allergen sources, material compositions, and clinical manifestations of nickel- and polymer-induced dermatitis in remote work environments.

Methods:

A targeted review of PubMed and Google Scholar (2005-2025) was conducted using the terms "nickel release," "polymer sensitization," "acrylate allergy," "epoxy resin dermatitis," "laptop dermatitis," and "headphone allergy." Case reports, regulatory safety analyses, and patch-test surveillance data from the North American Contact Dermatitis Group (NACDG) and European Surveillance System on Contact Allergies (ESSCA) were analyzed to identify device materials exceeding allergen release thresholds and to map sensitization trends.

Results:

Nickel release exceeding 0.5 $\mu\text{g}/\text{cm}^2/\text{week}$, the European Nickel Directive limit, was detected in 22-34% of laptops, headsets, and mobile devices. Epoxy-based coatings, polyurethane foams, and isobornyl acrylate adhesives in earpads and touch surfaces accounted for an increasing proportion of polymer-related reactions. Clinical presentations included sharply demarcated erythematous plaques on the ventral wrists, preauricular regions, and zygomatic areas correlating with device contact. Underrecognition remains significant due to absent component disclosure and limited device-specific patch-test panels.

Conclusions:

Implementation of standardized material disclosures, incorporation of device-associated acrylates and metal sensitizers into occupational patch-testing panels, and development of low-ion-release alloys and biostable polymer matrices together strengthen preventive strategies for contact dermatitis in the modern digital workspace.

Clinical Burden and Comorbidity Landscape of Perioral and Periorifical Dermatitis: A Retrospective Cohort-Matched Study

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Abstract

Objectives:

Perioral/periorifical dermatitis (POD) is a challenging inflammatory eruption affecting the perioral, perinasal, and periocular regions; less defined are its comorbid and treatment profiles across diverse populations [1].

Methods:

We conducted an IRB-approved, retrospective cohort-matched study at UC Davis Health from June 2019-May 2024, assessing associations between POD and comorbidities, Area Deprivation Index (ADI), follow-up frequency, and treatment modality. Patients were identified using ICD-9/10 codes (L71.0, T38.0X5A, T49.0X5A, 695.3, E932.0, E946.0). Inclusion required ≥ 2 encounters with these codes, including one dermatologist visit. Controls were age- and sex-matched $\sim 3:1$ with benign nevi cases.

Results:

292 POD cases and 867 controls were included. POD patients exhibited higher odds of acne vulgaris (117/292 [40%], OR 3.5; 95% CI: 2.53-4.86), atopic dermatitis (84/292 [29%], 4.1; 2.84-5.75), allergic dermatitis (46/292 [16%], 4.6; 2.84-7.52; all $p < 0.001$), and a greater likelihood of long-term corticosteroid exposure (30/292 [11%], 2.15; 1.33-3.49; $p = 0.002$). The burden score for immunocompromising comorbidities showed a stepwise increase in the odds of POD compared to a burden score of 0: 1 (OR 3.08; 95% CI: 2.29-4.18), 2-3 (3.12; 2.11-4.61), >3 (5.23; 2.90-8.97; all $p < 0.001$) after adjusting for age and sex. Increasing ADI was associated with fewer follow-ups (IRR 0.95 per unit, 0.92-0.98; $p = 0.004$). Treatment modality (topical, antibiotic, or combination) was not significantly associated with resolution.

Conclusions:

POD is linked to greater inflammatory and immunocompromised burden, suggesting broader systemic factors. Greater ADI correlated with poorer care continuity. Future studies are needed to examine optimal treatment approaches that address POD's clinical complexity.

Assessing Barriers to Patch Testing Across Skin Tones in a Diverse Urban Setting

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Abstract

Objectives:

Although Allergic Contact Dermatitis (ACD) affects all populations, patients with skin of color (SOC) are significantly less likely to receive a diagnosis of ACD compared to White patients. This study investigates whether social determinants of health (SDOH), including income, education, transportation, and insurance, contribute to disparities in access to skin patch testing (SPT) and subsequent diagnosis of ACD.

Methods:

This single-center prospective study enrolled adults and pediatric patients undergoing SPT at UT Physicians Dermatology (August 2025-present). Participants completed pre- and post-SPT surveys, collecting data on demographics, dermatitis characteristics, SDOH, barriers to testing, and satisfaction. SPT results at 48 and 96 hours were recorded. SOC was defined as patients identifying as non-White (African, Asian, Native American, Middle Eastern, or Hispanic).

Results:

Twenty patients were enrolled, with data collection ongoing (9 White, 11 SOC). SOC patients more often lived in urban, less affluent areas and reported lower annual incomes (<\$75,000: 36% SOC vs. 11% White). Financial and insurance barriers predominated among SOC patients (36% SOC), while White patients more often cited time-related barriers (27% White). SOC participants reported lower education levels (<Bachelor's: 27% SOC vs. 11% White) and fewer reported pre-SPT dermatitis treatment (45% SOC vs. 89% White), but both groups had similar post-SPT ACD diagnosis rates (55% SOC vs. 56% White).

Conclusions:

Preliminary data suggest that SDOH, particularly income, urban residence, insurance coverage, and education, may contribute to disparities in access to SPT among SOC patients. Understanding these barriers is crucial to improving the equitable diagnosis and management of ACD among diverse populations.

Disodium Lauroamphodiacetate: A 5-year Retrospective Review from a Metropolitan Contact Dermatitis Clinic

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Abstract

Objectives:

Disodium lauroamphodiacetate (DL) is a mild amphoteric surfactant commonly used in cosmetic and hygiene formulations. Despite its widespread use, evidence evaluating its allergenic potential is limited to case reports. Our aim was to perform a retrospective analysis to examine the prevalence and clinical features of allergic contact dermatitis from DL.

Methods:

A retrospective review was conducted of patients patch tested to DL at a metropolitan contact dermatitis clinic between 2020 and 2025. Patients were considered allergic if they demonstrated a patch test reaction ≥ 1 (per ICDRG criteria) to DL 1% aqueous at their final patch test reading. Descriptive statistics were used to analyze patient demographics, exposure sources, anatomic sites of dermatitis, clinical relevance, and co-reactivity with other surfactants.

Results:

Of 1,324 patients patch tested to DL, 17 (1.3%) demonstrated positive reactions. DL-positive patients were predominantly female (76.5%), had a mean age of 52 years, and 58.8% reported atopy. Most reactions were mild (1+) (82.4%), but many were clinically relevant (70.5%). Commonly affected sites included the face (58.8%) and neck (29.4%). The most frequently implicated product types were shampoos (34.2%) and facial cleansers (17.1%). A 41.2% rate of co-reactivity with oleamidopropyl dimethylamine was seen amongst patients allergic to DL.

Conclusions:

DL appears to be a rare but clinically relevant sensitizer. Allergic contact dermatitis to DL should be considered in women presenting with facial or neck dermatitis. Although prior studies have reported no co-reactivity between DL and other surfactants, our findings suggest patients allergic to DL show 41.2% co-reactivity to oleamidopropyl dimethylamine.

Paederus Dermatitis vs. Phytophotodermatitis: A Comparison of Post-Inflammatory Pigmentary Changes

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Abstract

Objectives:

This review aims to delineate the contrasting mechanisms of phototoxicity in Phytophotodermatitis vs. vesicant action in Paederus Dermatitis and evaluate the resultant long-term pigmentary sequelae, focusing specifically on the incidence of Post-Inflammatory Hyperpigmentation versus Post-Inflammatory Hypopigmentation.

Methods:

A literature search was conducted with PubMed and Google Scholar databases. The primary search terms used were: ("Phytophotodermatitis") AND ("Hyperpigmentation" OR "Post-inflammatory Pigmentation"); and ("Paederus Dermatitis") AND ("Hypopigmentation" AND "Post-inflammatory Pigmentation"). Searches were limited to articles published from 2000 to the present to focus on current clinical practice standards. Inclusion criteria included case reports and review articles that provided descriptions of the subsequent pigmentary phase.

Results:

The literature confirms the distinct pigmentary outcomes, which may establish this as a key differential point. PPD results in more cases of PIH. This can be attributed to the direct cytotoxic damage caused by furanocoumarins and UVA, which stimulates melanogenesis and results in melanin deposition in the basal layer and upper dermis. Conversely, PD is frequently reported to result in post-inflammatory hypopigmentation. While PIH can also occur transiently, the outcome of hypopigmentation may be due to localized damage to the melanocytes or inhibition of melanin transfer by the pederin toxin during the healing phase.

Conclusions:

This review shows that the two contact irritant dermatoses, PPD and PD, while similar in their patterned presentations, produce different long-term pigmentary sequelae. PPD is more associated with PIH. PD often leads to post-inflammatory hypopigmentation. This distinct difference in pigmentary outcome serves as a crucial retrospective diagnostic clue when the acute presentation has been missed.

Triggers of Riehl's Melanosis/Pigmented Contact Dermatitis: A Systematic Review Highlighting Skin-of-Color and Geographic Disparities

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Abstract

Objectives:

Riehl's melanosis (RM), or pigmented contact dermatitis (PCD), is an acquired hyperpigmentation disorder that disproportionately affects individuals with darker skin tones. The range and frequency of reported triggers remain poorly defined. We aimed to systematically identify clinically suspected and patch-test-confirmed triggers of RM/PCD and evaluate gaps in the literature.

Methods:

Following PRISMA guidelines, we searched several online databases (1990-present) for studies (case reports/series, cross-sectional studies, and cohort studies) reporting clinical or patch-test-confirmed triggers. Two reviewers independently screened records and extracted data, including triggers based on clinical suspicion and patch-test correlation.

Results:

Of 307 studies screened, 58 studies met inclusion criteria, comprising 1738 patients, 746 of whom underwent patch testing. Among 1509 patients with demographic data, 88% were female. The most frequent clinically suspected and patch-test-confirmed triggers were p-phenylenediamine (130 cases), henna (36), and fragrance (27). Common suspected triggers without patch testing included kumkum or sticker bindi (76), permanent or herbal hair dyes (19), and lightening creams (6). Patch-test-only data most often identified nickel sulfate (43), fragrance mix (32), thiomersal (26), and PPD (22). Nearly all studies originated from Asia (mainly India, Korea, and Japan), with only one from the United States, highlighting a striking geographic skew that mirrors RM/PCD's greater burden among individuals with darker skin tones and suggesting disparities in recognition, diagnosis, and research.

Conclusions:

RM/PCD is linked to diverse cosmetic and chemical exposures. The marked geographic and representation gaps underscore the need for more inclusive, globally representative, and standardized studies to improve diagnosis and prevention.

Drug Allergy as a Predictor of Cutaneous Adverse Reactions to GLP-1 Receptor Agonists

Authors and Affiliations: Kaya Rowe, BS

Abstract

Objectives:

To evaluate whether a history of drug allergy is associated with an increased risk of developing drug-induced dermatitis following initiation of glucagon-like peptide-1 (GLP-1) receptor agonists.

Methods:

We conducted a retrospective cohort study using the TriNetX Global Collaborative Network (159 HCOs). Two cohorts of adults (≥ 18 years) prescribed GLP-1 analogues (ATC code A10BJ) were defined: those with (Cohort 1; $n=133,155$) and without (Cohort 2; $n=1,952,674$) a documented history of drug allergy (ICD-10-CM: Z88.0-Z88.7). The index event was GLP-1 analogue initiation, with outcomes assessed 1-30 days post-index. Propensity score matching yielded two balanced cohorts of 128,140 patients. The primary outcome was diagnosis of dermatitis and eczema (ICD-10-CM: L20-L30). Risk analysis, Kaplan-Meier survival, and count-based outcome analysis were performed.

Results:

After excluding patients with prior dermatitis, risk of new-onset drug-induced dermatitis was higher in the allergy group (0.5%) than in the no-allergy group (0.3%) (Risk Ratio: 1.681; 95% CI: 1.452-1.947; $p < 0.0001$). Kaplan-Meier analysis showed lower survival probability free of dermatitis in the allergy cohort (99.46% vs. 99.68%; $p < 0.0001$). Although the allergy group had a higher mean number of dermatitis episodes, this difference was not statistically significant ($p = 0.130$).

Conclusions:

A history of drug allergy significantly increases the risk of developing dermatitis after GLP-1 receptor agonist initiation. However, among those affected, the number of dermatitis episodes did not differ significantly. Prior allergy history may serve as a predictor for initial reaction risk but not for recurrent events.

Acknowledgements:

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Pigmented Contact Dermatitis in Skin of Color Filipinos: A Case Series

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Case Study

Background:

Pigmented Contact Dermatitis (PCD) is a chronic, asymptomatic hyperpigmentation disorder often overlooked in clinical practice. First described in Europeans (Riehl's melanosis, 1917; Osmundsen, 1970), PCD remains underreported in the Philippines, with only two published reports to date. This case series highlights the high prevalence of PCD in Filipino skin and the critical role of patch testing in diagnosis and management.

Case Presentation:

We present 182 PCD patients evaluated at VMV Skin Research Centre + Clinics from January 2021 to September 2025 using the North American 80-Comprehensive Haptens Series. Patients presented with asymptomatic hyperpigmentation, predominantly on covered body areas, characterized by brown, bluish-brown, grayish, or black discoloration with ill-defined borders. The condition was often ignored until secondary changes (pruritus, erythema, lichenification) developed. Patch testing revealed fragrances as the leading allergen (232 reactions by 2025), followed by preservatives (184), active ingredients (97), and rubber (88). Common specific allergens included Fragrance Mix I & II, glutaraldehyde, methyldibromoglutaronitrile, disperse blue dyes, nickel, and cobalt. Remarkably, clinical improvement occurred rapidly upon allergen avoidance, as documented in serial photography of representative cases.

Conclusions:

PCD is highly prevalent in Filipino patients but significantly underdiagnosed. A systematic full-body examination and comprehensive patch testing are essential for accurate diagnosis. The pathogenesis remains incompletely understood; collaborative genetic studies with the Philippine Genome Center are planned to identify potential therapeutic targets. Increased awareness, expanded patch testing capabilities, and integration of advanced diagnostic modalities will improve recognition and management of this cosmetically distressing condition.

Acknowledgements:

Patch Testing and genetic studies will soon be conducted on patients in the military, where PCD is attributed to various parts and components of their uniforms.

Classifying Adverse Effects of Systemic Treatments for Atopic Dermatitis and Other Indications using the FDA Adverse Event Reporting System (FAERS)

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Abstract

Objectives:

Atopic dermatitis (AD) can be treated with several biologics and Janus kinase inhibitors (JAKi) through recent United States Food and Drug Administration (USFDA) approval. Further investigation characterizes real-world adverse effect (AE) patterns associated with biologic and JAKi therapies, enabling comparative evaluation of safety profiles across AD and other FDA-approved indications.

Methods:

Systemic therapies with an indication for AD by the USFDA were selected (dupilumab, tralokinumab, abrocitinib, and upadacitinib). The FDA Adverse Event Reporting System (FAERS) was utilized to identify AEs across therapeutic indications from 2020 to 2024, with corresponding patient outcomes systematically characterized to assess safety patterns.

Results:

Dupilumab had the largest number of reported adverse events when given for AD (n=122,047). Cutaneous AEs were the most common in dupilumab (47%) and tralokinumab (38.9%). Infections were the most common in upadacitinib (27.1%), and general systemic AEs were most common in abrocitinib (42.9%). Non-serious outcomes for AD diagnosis were favored through all medications, with upadacitinib having the highest hospitalization rate (24.3%). When dupilumab was prescribed for asthma (n=38,948), general systemic AEs was most common (40.2%). When prescribed for bullous pemphigoid (n=891), procedural complications were most common (94.6%). Prescription of upadacitinib for rheumatoid arthritis (n=29,390) and ulcerative colitis (n=3,365) demonstrated high rates of musculoskeletal AE (29.6%) and gastrointestinal AEs (31.9%), respectively.

Conclusions:

Findings demonstrate distinct AE profiles among systemic therapies for AD when stratified by indication. Integration of these real-world safety patterns supports evidence-based therapeutic selection and informed risk-benefit assessment in dermatologic practice.

Lip Dermatitis: A 5-Year Retrospective Review from a Metropolitan Contact Dermatitis Clinic

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Abstract

Objectives:

Allergic contact dermatitis is a frequent and often underrecognized cause of lip dermatitis, largely driven by repeated exposure to allergens present in lip and oral-care products. This study aimed to identify the most common allergens, assess their clinical relevance, and characterize personal product exposures in patients with isolated lip dermatitis presenting for patch testing.

Methods:

Retrospective review of 110 lip dermatitis patients comprehensively patch tested in a major metropolitan area over a 5-year period. Data collected included demographics, history of atopy, and patch test reaction prevalence and relevance, including reactions to personal care products.

Results:

A total of 110 patients were identified with 741 reactions. Most patients were female (83%). Among all positive patch test reactions, the most frequent allergens were nickel (4.3%) carmine (3.8%), fragrance mix I (3%), hydroperoxide of linalool (3%), and dodecyl gallate (2.8%). The most frequent relevant reactions were fragrance/flavor (46.6%), followed by emulsifier antigens (35.6%). Among patients who reacted to fragrance and/or flavor allergens (n = 63), 25% had reactions detected only through supplemental series that would have been missed with our standard series of 80 allergens. Other frequent clinically relevant reactions detected through supplemental series included carmine and candelilla wax. Reactions were most often linked to lip care products (29%) and toothpastes (9.7%).

Conclusions:

Fragrance/flavor and emulsifier allergens were the predominant relevant sensitizers in this lip dermatitis cohort. Many relevant patch test reactions would have been missed without supplemental and personal care product testing, underscoring the importance of comprehensive patch testing beyond standard series.

Contact Allergen Profiles in Vulvar Lichen Simplex Chronicus: A Review of Patch Test Findings

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Abstract

Objectives:

Vulvar lichen simplex chronicus (LSC) is a chronic pruritic dermatosis that can develop secondary to a range of conditions, including atopic dermatitis, chronic irritation, and allergic contact dermatitis (ACD). Identifying relevant contact allergens is essential for optimizing management and preventing recurrence. This review synthesizes the published literature on contact allergens most frequently implicated in vulvar LSC to inform diagnostic patch testing and allergen avoidance strategies.

Methods:

A narrative review of PubMed and Embase was conducted from inception through November 2025. Search terms included "vulvar lichen simplex chronicus," "contact dermatitis," "allergy," and "patch testing." Studies were included if they reported patch test results or identified contact allergens in patients with vulvar LSC. Eligible case reports, case series, and cohort studies were analyzed, and allergens were categorized by chemical class and product source.

Results:

Across included studies, the most frequently identified allergens were fragrance mix I/II, methylisothiazolinone/methylchlorisothiazolinone, benzocaine, and neomycin. Preservatives and fragrance components in personal care products, medicated wipes, and topical therapies were common sources. Reported sensitization rates to multiple allergens were higher than in general patch-tested populations.

Conclusions:

Fragrances, preservatives, and topical medicaments are key contact sensitizers in vulvar LSC. Incorporating targeted patch-testing panels, including topical antibiotics and preservatives, may enhance diagnostic accuracy. Clinician awareness of these high-yield allergens is essential to reduce chronic irritation, guide allergen avoidance, and improve symptom resolution in vulvar LSC. However, conclusions are limited by the small number of studies, heterogeneous reporting of allergens, and variability in diagnostic criteria across reports.

Phytochemical Sensitization in Botanical Skincare as a Growing Source of Contact Allergy

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Abstract

Objectives:

To identify plant-based sensitizers within cosmetic formulations and delineate molecular and botanical determinants of allergenicity in contemporary skincare.

Methods:

Literature from PubMed, Google Scholar, and Scopus databases (2000-2025) was analyzed using the terms "botanical skincare," "phytochemical allergy," "essential oil," and "contact sensitization." Patch test studies, ingredient registries, and clinical case reports were reviewed to determine recurrent sensitizers, structural patterns, and cross-reactivity profiles.

Results:

Essential oils rich in linalool, limonene, eugenol, and isoeugenol emerged as predominant sensitizers, particularly following air oxidation. Plant families including Asteraceae, Rutaceae, and Lamiaceae accounted for a disproportionate number of positive patch test results. Natural preservatives such as benzyl alcohol and cinnamic derivatives exhibited both direct and cross-reactive allergenicity. Variable phytochemical composition related to extraction methods and geographic sourcing hindered allergen predictability, while incomplete ingredient labeling limited diagnostic precision.

Conclusions:

Expansion of botanical skincare has generated an increasingly complex and evolving spectrum of phytochemical allergens with broad implications for diagnostic accuracy, regulatory policy, and population-level exposure risk. Comprehensive molecular delineation of allergenic constituents, integrated with standardized international labeling, enables quantification of sensitization prevalence, clarification of exposure-response dynamics, and establishment of evidence-based safety thresholds for formulation of plant-derived cosmetic ingredients.

From Label to Truth: Immediate and Delayed Testing for Drug Allergy Verification in Clinic

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Abstract

Objectives:

Drug allergy (DA) labels in patients' records are common but often unverified and false, negatively impacting morbidity, mortality and costs. This study aimed to evaluate the accuracy of reported DA labels in our dermatology clinic using an array of tests with immediate and delayed readings to verify or delabel drug allergies.

Methods:

We retrospectively reviewed adult patients (≥ 18 years) evaluated for suspected DA at the MHealth Fairview Dermatology Clinic from June 2018 to July 2023. Patients underwent comprehensive testing including skin prick (SPT), intradermal (IDT), and patch testings (PT). Clinical histories were reviewed by Dr. Bigliardi.

Results:

We evaluated 102 patients (mean age 50.3, 77.2% female) with 461 suspected DAs, mostly antibiotics (72.5%), mainly penicillins (28.2%). Immediate reactions accounted for 71.4% and delayed for 15.9%. For immediate type reactions, 397 SPT and 355 immediate IDT were done; 5.05% tested positive overall (2.27% SPT, 8.17% IDT). For delayed type reactions, 192 delayed IDTs and 274 PTs were done, with 166 overlaps; 13.9% tested positive overall (8.9% IDT, 12.8% PT, 2.4% both). Drug allergy labels were removed for 81.2% of drugs; 11.9% were reattempted without adverse reactions.

Conclusions:

Comprehensive allergy evaluation allowed safe delabeling for a majority of DAs and successful rechallenges. Limitations include imprecise allergy reporting systems and limited follow-up after testing. As the only U.S. dermatology clinic performing tests for both immediate and delayed type reactions, our findings emphasize the value of systematic DA workups in validating allergies and expanding safe treatment choices, particularly for older adults with comorbidities and those requiring antibiotics.

Comorbidities for Allergic Contact Dermatitis Diagnosed from Patch Testing

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Abstract

Objectives:

Allergic contact dermatitis (ACD) and atopic dermatitis (AD) are inflammatory skin conditions that share clinical features and immunologic characteristics. While AD comorbidities are well-documented, less is known about those associated with ACD.

Methods:

A retrospective study was performed of patients undergoing patch testing at a tertiary medical institution. The study was approved by University of California Davis IRB (#1374317) and data were collected through a RedCap database. Logistic regression models evaluated associations, while Wilcoxon tests assessed quality of life scores; statistical analyses were performed with Stata.

Results:

A cohort of 1,215 patients who underwent patch testing between 2018-2025 were analyzed. Patients had a median age of 51 (± 19.10), and 76% were female. The most common comorbidities in patients undergoing patch testing were hypertension (20.2%), depression (12.7%), anxiety (11.4%), urticaria (9.7%), osteoporosis (9.7%). A final diagnosis of ACD was significantly associated with lower odds of hypertension (OR 0.70, 95% CI 0.50-0.98, $p=0.036$) and higher odds of urticaria history (OR 2.14, 95% CI 1.29-3.58, $p=0.003$). No significant associations were observed between ACD and depression, anxiety, osteoporosis, or alopecia areata. Patient-reported outcome scores (Dermatology Life Quality Index and ACD Society Skindex-11) also suggested significant improvement after patch testing ($p<0.0001$) regardless of comorbidities.

Conclusions:

In this study, ACD was significantly associated with urticaria, an autoimmune condition, but no other positive associations, including with psychiatric comorbidities were found. There was a negative association with hypertension. These findings highlight different implications for comorbidities between ACD and AD, underscoring the need for tailored screening in immune-mediated skin conditions.

Patient-Reported Exposure Categories as Predictors of Patch Test Positivity

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Abstract

Objectives:

To assess the concordance between patient-reported suspected sources of allergic contact dermatitis and confirmed patch test (PT) results across broad exposure categories (cosmetics, hair/skin products, occupational materials, and household items). Secondary aims were to identify common allergens within each category and explore variation across Fitzpatrick skin types.

Methods:

We analyzed data from 141 patients enrolled in a prospective clinical trial who underwent streamlined 10-allergen PT panel at a tertiary dermatology center. Before testing, patients completed a comprehensive questionnaire identifying product categories they believed contributed to their dermatitis. PT was performed using a streamlined 10-allergen panel. Concordance was defined as a positive reaction to at least one allergen attributable to the patient's suspected category. Associations between patient-suspected categories and overall PT positivity were evaluated using logistic regression.

Results:

Concordance was high across all patient-reported categories: cosmetics 83% (33/40), hair/skin products 78% (39/50), household/clothing/rubber items 64% (21/33), and jewelry 78% (32/41). Patients who suspected cosmetics were over three times more likely to have a reaction (OR=3.09, 95% CI: 1.31-8.22, P=0.015), and those who suspected hair/skin care products were more than twice as likely (OR=2.32, 95% CI: 1.08-5.29, P=0.037) compared with those who did not. Among patients suspecting cosmetics or hair/skin products, propolis accounted for half of positive reactions, followed by nickel, benzoic acid, fragrance mix, and *Myroxylon pereirae* resin. Fitzpatrick skin type did not significantly influence concordance.

Conclusions:

Patient-reported exposure categories can effectively guide targeted PT. Incorporating personalized assessments may streamline clinical workflows, enhance diagnostic accuracy, and reduce unnecessary panel expansion.

Ultra-Processed Food Consumption and Atopic Dermatitis: A Proposed Link Between Diet, Barrier Integrity, and Allergic Inflammation

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Abstract

Objectives:

Dietary patterns, particularly the consumption of ultra-processed foods (UPFs), have recently been implicated in novel research pertaining to atopic dermatitis (AD). The NOVA system classifies UPFs as highly processed products rich in refined ingredients, additives, and preservatives. UPFs are associated with systemic inflammation, metabolic dysfunction, oxidative stress, and immune alteration, raising interest in their potential role in AD pathogenesis.

To evaluate evidence linking UPF consumption to AD and examine plausible biological mechanisms connecting dietary processing with barrier and immune dysfunction.

Methods:

A PubMed search (January 2010-February 2025) using "ultra-processed foods," "atopic dermatitis," "eczema," "children," and "allergic disease" identified population-based and mechanistic studies. Inclusion criteria encompassed observational and review studies assessing UPF exposure and allergic outcomes.

Results:

A small but growing number of population studies report associations between higher UPF or fast-food intake and eczema. In NHANES 2005-2006, greater UPF intake correlated with eczema in girls but not in adults overall. ISAAC Phase 3 found that fast-food consumption ≥ 3 times weekly was linked to roughly 30% higher odds of severe eczema. Experimental data suggests UPFs impair epithelial tight junctions, disrupt gut microbiota, reduce short-chain fatty acids, and promote oxidative stress and micronutrient deficiencies, which may compromise barrier integrity and amplify Th2-skewed inflammation characteristic of AD.

Conclusions:

Evidence supports a biologically plausible association between high UPF intake and AD, though causality remains unproven. Longitudinal studies using standardized NOVA classification and validated AD outcomes are needed to clarify directionality and dose-response. Promoting minimally processed diets represents a modifiable avenue to improve skin and immune health.

Top Common Haptens Detected Through Patch Testing and Their Correlation with Contact Dermatitis and Other Dermatoses: A 10-Year Retrospective Cross-Sectional Study from a Single Centre in Makati City, Philippines

Authors and Affiliations: Bianca Rojas, MD, Skin and Cancer Foundation, Inc.; Vermen M. Verallo-Rowell, MD, VMV Skin Research Centre + Clinics (VSRC)

Abstract

Objectives:

Identify the most common allergens among Filipino patients who underwent an 80-allergen patch test (2015-2024) and examine associations with co-existing dermatoses other than contact dermatitis.

Methods:

The study utilized a 10-year retrospective cross-sectional study, with a review of records as its main method of data collection. The data collected were from Filipino patients who underwent patch test studies using the North American 80 comprehensive series, spanning from January 2015 to December 2024, at a skin research centre in Makati City, Philippines.

Descriptive statistics were used to summarize the general and clinical characteristics of the participants. Frequency and proportion were used for categorical variables (nominal/ordinal), mean and standard deviation for normally distributed interval/ratio variables, and median and range for non-normally distributed interval/ratio variables. Missing variables were neither replaced nor estimated.

Results:

Median age 41 years; majority female (65.9%). Most frequent allergens: Disperse blue mix (52.7%), Glutaraldehyde (41.2%), Methyl dibromo glutaronitrile (34.8%), p-Phenylenediamine base (27.8%), and Cobalt chloride (27.2%). Coexisting dermatoses included pigmented contact dermatitis (12.4%), psoriasis vulgaris (9.9%), atopic dermatitis (8.1%), acne vulgaris (6.6%), and seborrheic dermatitis (3.9%). Textile dyes and preservatives were strongly associated with both general and specific dermatoses.

Conclusions:

Textile dyes, preservatives, and metal salts consistently emerged as the predominant sensitizers. These allergens were frequently implicated not only in general contact dermatitis but also in specific dermatoses like pigmented contact dermatitis, psoriasis, atopic dermatitis, acne vulgaris, and seborrheic dermatitis.

Acknowledgements:

Dr. Vermen Verallo-Rowell and the staff at VSRC, Makati, Philippines

A Retrospective Review of Geriatric Patch Testing: Characterizing Trends in Contact Allergy

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Abstract

Objectives:

Allergic contact dermatitis represents a significant health burden amongst geriatric populations. Recent data suggests there are differences in contact allergy between geriatric and general adult cohorts. Given there have been limited in-depth analyses of contact allergy in older adults, we evaluated a geriatric cohort within a large midwestern patch testing center.

Methods:

A retrospective review was performed for 594 patients, ages 65 and older, who completed patch testing between July 2020 - September 2025. Data was stratified by the following age groups: 65-74, 75-84, 85 and above. Significance-Prevalence Index Numbers (SPIN) were computed for each allergen.

Results:

83.3% demonstrated positive reactions (PR) with 28.3% having at least one positive relevant reaction (PRR). The proportion of PRRs increased with age. Based on SPIN, the most relevant reactions were methylisothiazolinone (MI), linalool, Balsam of Peru, methylchlorisothiazolinone/MI, and fragrance mix I. Carmine, isostearamidopropyl morpholine lactate, and cetrimonium chloride represented relevant reactions that are not currently tested on the North American Contact Dermatitis Group (NACDG) standard series.

Conclusions:

MI and fragrance are the most important contact allergies to consider in older adults. Relevance of allergens may increase amongst the most elderly from prolonged allergen exposure with age. Comprehensive patch testing to supplemental series is critical in geriatric populations as relevant allergens may be missed with testing a standard series alone.

Acknowledgements:

We would like to thank Julian Dhara, MS for providing data analysis support for this project.

A Sticky Situation: Assessing for Co-reactivity of Lanolin and Cetyl and Stearyl Alcohols

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Abstract

Objectives:

Lanolin is a well-documented cause of allergic contact dermatitis (ACD), although the exact allergenic component(s) have been difficult to clearly delineate. Cetyl alcohol and stearyl alcohol (or combined, as cetearyl alcohol) have been reported on rare occasion to cause ACD. Given uncertainty regarding the chemical structure of allergenic components of lanolin along with concomitant use of lanolin and cetyl/stearyl alcohols in many products, the potential for co-reactivity versus cross-reactivity has been debated. This study evaluated for co-reactivity between lanolin and cetyl/stearyl alcohols.

Methods:

Cohorts of lanolin-allergic patients (1+ reaction strength or greater) and cetyl, stearyl, or cetearyl alcohol-allergic patients (borderline reaction strength or greater) were identified from a database of 2,381 patients from a large, midwestern patch testing center between 2020-2025. Co-reactivity rates between cetyl/stearyl alcohol and lanolin were calculated, and statistical significance was computed with the Fisher's exact test.

Results:

The co-reactivity rates were 1.62% among lanolin positive patients and 6.25% among cetyl/stearyl/cetearyl alcohol positive patients (Fischer's exact test, OR= 0.78, 95% CI 0.15-2.45, p= 1.00).

Conclusions:

The rates of concomitant reactions between lanolin and cetyl, stearyl and cetearyl alcohols were not statistically significant nor did they meet the American Contact Dermatitis Society (ACDS) Contact Allergen Management Program (CAMP) threshold of 10% for co-reactivity. Lanolin-allergic patients may be reassured that they do not need to avoid cetyl, stearyl or cetearyl alcohol in personal care products. Patch testing of lanolin-allergic patients to cetyl, stearyl and cetearyl alcohol could be considered as an adjunct test in some clinical circumstances.

FDA-Approved Biologics for Moderate-to-Severe Atopic Dermatitis: A Comparative Review Highlighting the Role of Comorbidities in Treatment Selection

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Abstract

Background:

Atopic dermatitis (AD) is a chronic inflammatory disease that substantially impacts quality of life (QoL) and is often accompanied with other atopic conditions, such as asthma and allergic rhinitis. The introduction of biologic agents targeting AD specific immune pathways has transformed the therapeutic landscape for moderate-to-severe AD, offering greater efficacy and improved safety compared to traditional systemic treatments.

Objectives:

To compare currently FDA-approved biologics for AD-dupilumab, tralokinumab, lebrikizumab, and nemolizumab-and examine how patient comorbidities influence therapeutic selection and outcomes.

Methods:

A narrative review of pivotal clinical trials, post-marketing data, and real-world studies was conducted to evaluate efficacy, safety, and comorbidity-specific outcomes associated with each biologic.

Results:

All agents demonstrated significant improvement in disease severity and quality of life, though distinct differences in dosing, safety profiles, and performance among patients with comorbid atopic and eosinophilic disorders were noted. Individual comorbidities often guided treatment choice and therapeutic response.

Conclusions:

Personalized biologic selection based on comorbid conditions, patient preferences, and drug-specific characteristics may optimize outcomes in moderate-to-severe AD. Integrating comorbidity-driven considerations into therapeutic algorithms can enhance long-term efficacy, safety, and quality of life. Further comparative and real-world studies are warranted to inform individualized treatment strategies.

Systemic Nickel Allergy Syndrome: A Literature Review

Authors and Affiliations: Ashleigh Letterman, BS, Alice L. Walton School of Medicine; Scott Jackson, MD, Alice L. Walton School of Medicine; Allison Freeman, BA, Alice L. Walton School of Medicine; Jeffrey Boos, MD, Brigham and Women's Hospital

Abstract

Objectives:

We saw a patient with a history of allergic contact dermatitis to nickel experience resolution of hand dermatitis, chronic pain (diagnosed as fibromyalgia), and chronic diarrhea (diagnosed as irritable bowel syndrome) with a low-nickel diet after just one month. She was diagnosed with SNAS, and this intriguing case prompted the review that follows. Our objective is to review the latest clinical information on systemic nickel allergy syndrome and present a narrative review, focusing on the underdiagnosis of nickel allergy and SNAS.

Methods:

Pubmed search for articles on the topic using keywords: nickel, allergy, systemic nickel allergy syndrome, nickel & irritable bowel syndrome, systemic contact dermatitis & nickel, nickel & fibromyalgia.

Results:

Systemic nickel allergy syndrome (SNAS) is a syndrome characterized by both cutaneous and extracutaneous symptoms following systemic exposure to nickel, most commonly through the ingestion of nickel-containing foods in individuals sensitized to nickel via skin contact. Patients with SNAS present with dermatitis, as well as gastrointestinal, neurological, and other extracutaneous symptoms. The most widely implemented treatment is the low-nickel diet, but chelation, desensitization, and systemic medications can also be tried and have promising results.

Conclusions:

Nickel is the second most common cause of contact allergy, and the most common allergen to induce a positive reaction on patch testing. This review demonstrates that up to 20% of patients with dermatitis who were patch-tested for nickel allergy test positive. Thus, evaluation for nickel allergy should be considered in patients presenting with hand eczema, irritable bowel syndrome-type symptoms, and/or fibromyalgia symptoms.

Acknowledgements:

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A Pilot Double-Blind Randomized Controlled Trial on the Efficacy and Safety of a Novel Skin Barrier Product versus Petrolatum in Individuals with Skin Barrier Dysfunction

Authors and Affiliations: Cristina C. Verillo Rowell, MD, MBA, Skin and Cancer Foundation, Inc.; Vermen M. Verillo-Rowell, MD, VMV Skin Research Centre + Clinics (VSRC)

Abstract

Objectives:

Skin barrier dysfunction underlies common dermatologic conditions, including atopic dermatitis, contact dermatitis, psoriasis, and xerosis. While petrolatum remains widely used for occlusion, it lacks the physiological lipids essential for barrier restoration. A novel formulation containing ceramide NP, cholesterol, virgin coconut oil (3:1:1 ratio), and monolaurin may provide superior barrier restoration through physiological lipid replacement and antimicrobial benefits.

Objective: To evaluate the preliminary efficacy and safety of a novel barrier cream compared to petrolatum in individuals with mild-to-moderate skin barrier dysfunction.

Methods:

This double-blind, randomized, parallel-group pilot trial enrolled twenty-five participants with barrier dysfunction (atopic dermatitis, psoriasis, contact dermatitis, or xerosis). Participants were randomized to apply either the novel cream (n=13) or petrolatum (n=12) twice daily to the volar forearm for 28 days. For this interim analysis, transepidermal water loss (TEWL), hydration, sebum, erythema, pigmentation, and patient-reported dryness and itch were measured at baseline, week 1, week 2, and week 4. Analysis used repeated measures ANOVA.

Results:

A significant group-by-time interaction was observed for TEWL ($p=0.013$). The novel cream group showed progressive improvement (baseline: 7.16 ± 1.6 to week 2: 6.75 ± 1.7 g/m²/h), while petrolatum deteriorated markedly (baseline: 8.42 ± 4.5 to week 2: 15.17 ± 12.8 g/m²/h). Hydration increased in both groups, with petrolatum achieving paradoxically higher levels despite worse barrier function ($p=0.071$). Both groups showed comparable improvements in dryness, itch, and erythema. No adverse events occurred.

Conclusions:

This interim analysis suggests that the novel physiological lipid-based cream provides sustained barrier improvement, while petrolatum may be associated with deterioration in barrier function, potentially challenging current paradigms of barrier repair.

Variability in Consumer Cosmetic Safety App Classifications for Products Containing ACDS Core Allergens

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Abstract

Objectives:

Allergic contact dermatitis (ACD) affects one in five individuals, and many more consumers are concerned about skin care product selection. With 632 dermatology-related apps available, concerns remain about variable standards and quality of recommendations which could potentially mislead users. Our aim was to evaluate validity of widely used cosmetic safety apps compared to identified allergens included in the 2020 ACDS Core Allergen Series (CAS).

Methods:

Popular leave-on personal care products (moisturizers, shampoos, conditioners, serums, sunscreens, and lotions) were screened for ingredients listed as allergens in the CAS. Allergen categories included fragrances, preservatives, antimicrobials, surfactants, and related compounds, while metals, corticosteroids, local anesthetics, hair-dye colorants, rubber antioxidants, resins, and UV filters were excluded. Cosmetic safety apps were chosen based on cross-platform availability, user reach (Yuka > 55 million; Think Dirty > 7 million), innovation (OnSkin top 2024 app in Education, Science & Reference), and clinical endorsement (SkinSAFE). Risk labels were standardized (Minimal/Higher) and compared with Cosmetic Ingredient Review (CIR), FDA, and combined CIR/FDA classifications. Sensitivity and specificity were calculated using the CAS.

Results:

Apps demonstrated moderate sensitivity (60%) for detecting confirmed allergens but poor specificity (23%), frequently over-classifying safe ingredients as high risk. Agreement with regulatory standards was inconsistent and lacked uniformity across cosmetic safety apps in allergen classification.

Conclusions:

Cosmetic safety apps showed moderate sensitivity and low specificity relative to CAS. Over- and under-flagging may lead to inappropriate product use or avoidance by consumers. Standardization and regulatory harmonization are necessary to improve the accuracy, consistency, and educational value of these online tools.

Hidden Contact Allergens in “Clean” and “Fragrance-Free” Cosmetics

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Abstract

Background:

Growing consumer demand for "clean," "natural," and "fragrance-free" cosmetics has transformed formulation practices across the beauty industry. Product reformulations intended to eliminate synthetic preservatives and fragrances often substitute botanical or plant-derived compounds that carry unrecognized allergenic potential. Resulting trends have reshaped the epidemiology of contact dermatitis, introducing sensitizers under a disguise of purity and safety.

Objectives:

To analyze evolving allergen profiles in products marketed as clean or fragrance-free and identify sources of contact sensitization within this expanding market.

Methods:

PubMed, Google Scholar, and Scopus databases (2010-2025) were searched using terms including "contact dermatitis," "clean beauty," "natural cosmetics," "fragrance-free," "botanical allergen," and "preservative alternative." Ingredient analyses and published patch-testing data were reviewed to identify recurrent allergens and labeling inconsistencies.

Results:

Hidden sensitizers such as benzyl alcohol, linalool, limonene, and hydroxyacetophenone appeared frequently in products labeled fragrance-free, many derived from essential oils or botanical extracts. Natural antimicrobials including ethylhexylglycerin and caprylyl glycol increasingly replaced parabens but introduced new patterns of sensitization. Labeling inaccuracies occurred in up to 45% of fragrance-free items, while tea tree oil, lavender, and citrus components contributed to rising positive patch-test rates.

Conclusions:

Marketing language promising "clean" or "natural" formulations often conceals complex allergen profiles. Greater regulatory oversight, standardized terminology, and clinician awareness are needed to protect consumers from mislabeled or misleading products. Ingredient transparency constitutes a critical determinant of dermatologic safety within contemporary cosmetic formulation science.

Integrating Silicone Wristband Exposure Monitoring with Patch Testing to Identify Clinically Relevant Allergens in Allergic Contact Dermatitis

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Abstract

Objectives:

Patch testing is the gold standard for diagnosis of allergic contact dermatitis (ACD). However, whether a positive reaction reflects current exposure limits the relevancy of traditional results. We evaluate whether silicone wristbands (SWBs), which passively capture individual exposure to organic chemicals, can complement patch testing by identifying clinically relevant environmental allergens in patients with ACD.

Methods:

Five adult patients underwent patch testing with ACDS Core 90 while concurrently wearing a silicone wristband while maintaining usual product use and environmental exposures. SWBs were extracted and analyzed for over 1500 organic chemicals using a comprehensive GC-MS analysis. Detected chemicals were compared with patch test results and patient history to evaluate overlap, overlooked allergens, and feasibility of exposure data into clinical decision-making.

Results:

SWBs detected ACD-relevant compounds including fragrances, preservatives, and plasticizers across all participants. In three participants, SWB detected exposures aligned with positive patch test allergens (e.g., cinnamal, linalool), confirming clinical relevance. In one case, SWBs detected chemicals that have been reported as allergens, but are not available for patch testing, representing potential missed diagnoses.

Conclusions:

Our preliminary results demonstrate the feasibility and clinical promise of integrating SWB exposure profiles with patch testing. Wristbands captured individualized, real-world exposures that may refine allergen relevance, highlight missed allergens, and support more precise avoidance strategies. These results highlight the need for an expanded study to evaluate the utility of SWBs and guide integration of modern exposure monitoring into classical ACD diagnostics.

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Hidden Allergens Behind Wearable Technology and the New Era of Adhesive Dermatitis

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Abstract

Objectives:

To characterize the growing incidence, mechanisms, and allergen profiles associated with adhesive dermatitis linked to wearable technology and to identify diagnostic and preventive implications for clinicians.

Methods:

Literature published from 2012-2025 was reviewed across PubMed and Google Scholar using terms "adhesive dermatitis," "wearable device," "isobornyl acrylate," "medical adhesives," and "skin sensor." Case series, patch test studies, and manufacturer safety data were evaluated for allergen composition and reported sensitization rates.

Results:

Across published reports, acrylate monomers, epoxy resins, and rubber accelerators were the most frequent sensitizers identified in adhesive-related dermatitis. *Isobornyl acrylate* emerged as a predominant allergen in users of wearable glucose monitors and fitness sensors, with several case series documenting high patch-test positivity among affected individuals. For example, dermatology-clinic cohorts have reported widespread sensitization to *isobornyl acrylate* in pediatric users of continuous glucose monitors. Occlusion, sweat accumulation, and repetitive microtrauma further amplified irritant and allergic reactions, particularly in high-friction or moisture-prone areas. Inconsistent ingredient disclosure across manufacturers continues to hinder accurate allergen identification and effective prevention strategies.

Conclusions:

Integration of wearable biosensing systems into continuous physiologic monitoring has defined a spectrum of adhesive-associated cutaneous reactions spanning irritant and allergic mechanisms. Increasing recognition of acrylate and methacrylate monomer sensitization stresses the need for chemical characterization of adhesive matrices, standardized global ingredient transparency, and innovation in polymer engineering to minimize epidermal barrier disruption and immune activation during prolonged skin contact.

Next Generation Accelerator Allergens in Nitrile Medical Gloves with Evolving Sensitization Patterns Among Healthcare Professionals

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Abstract

Background:

Widespread replacement of natural rubber latex with nitrile gloves has reduced latex protein hypersensitivity yet introduced sensitization to chemical accelerators used in nitrile vulcanization. Compounds such as diphenylguanidine (DPG), zinc diethyldithiocarbamate (ZDEC), and mixed carbamate and thiocarbamate derivatives have been increasingly identified in allergic contact dermatitis among healthcare personnel. Despite marketing claims of "accelerator-free" products, residual monomers and cross-reactive intermediates continue to provoke hand dermatitis in clinical settings.

Objectives:

To analyze accelerator allergen profiles in nitrile glove formulations and assess their contribution to occupational contact dermatitis among healthcare workers.

Methods:

A structured review of PubMed, Google Scholar, and Scopus databases (2010-2025) was performed using the terms "nitrile glove allergy," "rubber accelerators," "diphenylguanidine," "carbamate sensitization," and "occupational dermatitis." Patch test results from the North American Contact Dermatitis Group (NACDG) and European Surveillance System on Contact Allergies (ESSCA) were evaluated for temporal sensitization trends and glove-associated chemical substitutions.

Results:

Declining sensitization to classic thiuram accelerators has been paralleled by increasing reactions to guanidine and carbamate derivatives, reflecting shifts in manufacturing chemistry rather than elimination of allergenic potential. Glove extract analyses frequently demonstrated detectable accelerator residues in products labeled as hypoallergenic. Clinical presentations predominantly involved palmar and interdigital erythema with fissuring and vesiculation exacerbated by occlusion and repeated disinfection.

Conclusions:

Transition to nitrile gloves has modified the allergenic landscape of medical hand protection. Enhanced chemical transparency, inclusion of novel accelerator classes in patch test batteries, and optimization of vulcanization processes are needed to mitigate contact sensitization among healthcare professionals.

Under the Gel: Hidden Acrylates Behind At-Home UV Gel Manicures

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Abstract

Objectives:

Exposure to acrylates in UV-cured at-home gel nail polish is a rising cause of allergic contact dermatitis¹. Nail series from two popular patch test allergen companies, Dormer Laboratories² and SmartPractice Canada³, lists 12 and 10 specific acrylate-based allergens, respectively. We aim to catalog acrylates present in commonly used at-home UV-cured gel polish, compare them against the two panels, and estimate the proportion of acrylates used in practice but not tested in the standard panels.

Methods:

Ingredients from 11 UV-cured at-home gel nail polish brands, totaling 31 polishes (base coat, top coat, and red gel polish), available at Ulta and Target, were analyzed for acrylate monomers. The acrylates were cross-matched against those found in the 12 MN-1000 Dormer and SmartPractice Canada panels.

Results:

Among the 23 acrylates found in the UV-cured at-home gel nail polishes, 12 (48%) appear in the Dormer and/or SmartPractice nail panels. Hydroxypropyl Methacrylate, Di-HEMA trimethylhexyl dicarbamate, and HEMA were the most commonly found acrylates. The most frequently used allergens that were absent from both panels were isobornyl acrylate and di-HEMA trimethylhexyl dicarbamate, which were found in 9 and 16 polishes, respectively.

Conclusions:

Many acrylate monomers widely used in UV-cured gel nail products are not covered in current standard patch test panels, highlighting a substantial gap in allergen surveillance. Underrepresentation can contribute to the underdiagnosis of allergic contact dermatitis. Future research can aim to identify sensitization to these currently untested acrylates.

Acknowledgements:

Sources:

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Understanding Copositivity - Utilizing Pairwise Bidirectional Analysis and Correcting for Background Positivity Rates to Evaluate Copositivity with Bacitracin

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Abstract

Objectives:

During patch testing, patients may be positive to multiple allergens simultaneously, called copositivity. Understanding copositivity patterns helps patients avoid other untested allergens to which they may be sensitive. However, there is no established systematic approach to understanding copositivity that incorporates correcting for background overall positivity rates.

Methods:

We evaluated copositivity rates with bacitracin in the Mayo Clinic Standard Series from 2012-2021. We describe our method in pairwise evaluation of copositivity patterns, delineating the bidirectional relationship between any two allergens (primary and secondary focus). Specifically, we demonstrate the value of correcting for background overall positivity rates using the Contact Allergen Background Correction Factor (CAB-CF), which reduces skew caused by disparate overall positivity between two allergens (e.g., the bias caused by some allergens having extremely high overall positivity rates).

Results:

394,921 allergens were applied to 5,943 patients; bacitracin had an overall positivity of rate of 5.97%. When bacitracin was the secondary focus and without background correction, 46 of 79 (58.3%) allergens demonstrated $\geq 10\%$ copositivity. With background correction, only 4 of 79 allergens (5.1%) demonstrated $\geq 10\%$ copositivity; of these only benzalkonium chloride (16.5%) and neomycin (40.7%) were considerably greater than the commonly accepted clinically relevant 10% copositivity threshold.

Conclusions:

Copositivity between any two allergens is a bidirectional relationship, which can be described as having a primary and secondary focus. Background correction with CAB-CF is crucial in understanding copositivity rates between two allergens, particularly if one allergen has a dramatically higher overall positivity rate than the other.

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Comparison of Detachable Dissolvable Microneedle (MN) Patch Test versus 48-hour Occlusive Patch Test in Detecting Metal Contact Allergies: A Pilot Study

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Abstract

Objectives:

The standard patch test (SPT) requires 48-hour occlusion for allergen penetration through stratum corneum, which is uncomfortable and restricts daily activities. Detachable dissolvable microneedle patch test (DDMNPT) may eliminate occlusion time. We evaluated whether DDMNPT can detect metal contact allergies.

Methods:

This IRB-approved trial enrolled patients with known contact allergy to nickel sulfate, potassium dichromate, and/or cobalt chloride at Srinakharinwirot University between March 2024 and August 2025. Participants underwent DDMNPT and SPT concurrently. DDMNPT was applied on the back for 2 minutes and was removed. There were 2 needle lengths of DDMNPT: 200 μm and 300 μm , containing five allergen concentrations (100%, 50%, 20%, 10%, 1% of SPT). SPT was applied to the opposite side. Readings were performed on days 2, 3, 7, 14 and 28.

Results:

Among 47 participants, re-testing with SPT confirmed 23/28 (82.1%), 15/17 (88.2%), and 12/15 (80%) previous positive reactions to nickel sulfate, potassium dichromate, and cobalt chloride, respectively. The concordance between SPT and DDMNPT varied by allergen and needle length. For nickel sulfate, concordance was 65.2% with 200 μm -DDMNPT (15/23 positive reactions) and 69.6% with 300 μm -DDMNPT (16/23). For potassium dichromate, concordance rate was 20.0% (3/15) and 33.3% (5/15) for the 200 μm - and 300 μm -DDMNPT, respectively. For cobalt chloride, concordance rate was 50.0% (6/12) and 66.7% (8/12). Importantly, the DDMNPT was quick, well-tolerated, with no pinpoint bleeding, skin infection, or persistent reactions.

Conclusions:

DDMN patch testing shows promise for detecting metal contact allergies. Further research is needed to optimize needle length and allergen concentration.

Acknowledgements:

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Ceramide Deficiency and Allergen Sensitization in Barrier-Compromised Skin

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Abstract

Objectives:

Disruption of epidermal lipid architecture represents a central event in the pathogenesis of allergic contact dermatitis and atopic inflammation. Ceramides, which constitute nearly 50% of stratum corneum lipids by mass, maintain barrier cohesion and regulate transepidermal water loss. Deficiency in ceramide content or altered sphingolipid subclass composition increases epidermal permeability, enabling transcutaneous allergen entry and augmenting cutaneous immune activation through enhanced antigen presentation and cytokine release.

Objective: To examine mechanistic and clinical evidence linking ceramide depletion to increased allergen absorption, cutaneous sensitization, and chronic inflammatory skin disease.

Methods:

A targeted literature review was conducted using PubMed, Google Scholar, and Scopus (2000-2025) with search terms "ceramide deficiency," "skin barrier lipids," "allergen penetration," "sensitization," and "epidermal permeability." Human biopsy data, murine knockout models, and biophysical lipid analyses were evaluated to correlate lipid composition with immune response modulation.

Results:

Reduced levels of long-chain ceramide species (particularly CER[EOS] and CER[NP]) were consistently associated with elevated transepidermal water loss and increased permeability to haptens such as dinitrochlorobenzene and nickel sulfate. Barrier-compromised skin demonstrated upregulation of IL-1 β , IL-33, and thymic stromal lymphopoietin, driving Th2-skewed sensitization. Experimental ceramide supplementation restored lamellar body organization, normalized corneocyte cohesion, and reduced allergen uptake in both human and murine models.

Conclusions:

Reduced ceramide abundance amplifies transcutaneous allergen permeability and antigen-driven immune activation, reinforcing the centrality of stratum corneum lipid architecture in maintaining epidermal immunologic homeostasis. Restoration of physiologic ceramide composition through targeted lipidomics-guided interventions offers a mechanistically precise approach to attenuating barrier-dependent sensitization cascades and mitigating chronic inflammatory dermatoses.

Occupational Patterns of Contact Dermatitis: An Analysis of the Top Ten Professions with Allergen Exposures

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Abstract

Objectives:

Occupational contact dermatitis (OCD) persists as a leading cause of work-related morbidity, with incidence patterns shaped by distinct allergen exposures across professional sectors. Comprehensive cross-professional analyses remain limited despite evolving chemical formulations and regulatory standards.

Objective: To analyze contemporary patterns of allergen exposure and dermatitis prevalence across the ten professions most affected by occupational skin disease, identifying high-impact allergen classes and exposure mechanisms driving sensitization.

Methods:

An integrative analysis was conducted using data from PubMed, Google Scholar, and occupational surveillance systems including the North American Contact Dermatitis Group (NACDG), European Surveillance System on Contact Allergies (ESSCA), and National Institute for Occupational Safety and Health (NIOSH) (2000-2025). Studies reporting profession-specific allergen prevalence, patch-test frequencies, and exposure conditions were systematically reviewed to identify dominant sensitizer classes and exposure trends.

Results:

Healthcare workers, hairdressers, metalworkers, machinists, construction workers, cleaners, food handlers, mechanics, nail technicians, and agricultural laborers accounted for the highest incidence rates of OCD. Nickel, cobalt, chromates, acrylates, epoxy resins, isothiazolinones, and rubber accelerators were recurrent sensitizers. Healthcare and cosmetology sectors demonstrated rising acrylate sensitization, while construction and metalwork exhibited persistent chromate and nickel reactivity. Extended glove use, repeated sanitization, and detergent contact intensified barrier disruption and cumulative allergen absorption.

Conclusions:

Analysis of occupational dermatitis patterns demonstrates a transition from traditional metal and solvent sensitizers toward polymeric, preservative, and acrylate-based allergens. Quantitative allergen surveillance integrated with sector-specific exposure mapping identifies sensitization clusters. Optimization of material composition, implementation of comprehensive chemical transparency, and integration of evidence-based barrier protection strategies strengthen preventive dermatologic standards across high-risk occupational environments.