

Relevance and Avoidance of Skin-Care Product Allergens: Pearls and Pitfalls

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KEYWORDS

- Allergic contact dermatitis • Relevance • Avoidance
- Skin-care • Fragrance • Preservative

Patch testing can be particularly rewarding when skin-care product allergens are identified. Careful determination of relevance, followed by careful education regarding allergen avoidance, can result in dramatic clinical improvement. Several common clinical scenarios are reviewed with a focus on pragmatic solutions to heighten positive patient outcomes.

CLINICAL SCENARIOS

Scenario 1

A patient with fragrance mix I (FM I) allergy returns to your office asking if she can use fragrance-containing lotion, rinse-off soap, and laundry detergent. None of the ingredients specifically list the FM I allergens. Which of these products will you recommend that she use, if any?

Scenario 2

A young father with an allergy to balsam of Peru wants to know about using tea tree oil skin-care products, Hawaiian Bath and Body Pineapple Soap, and Vicks VapoRub cream on his child. What are your recommendations?

Scenario 3

A patient allergic only to quaternium-15, who tested negative to formaldehyde, has been faithfully avoiding the allergen but continues to

experience eruptions of dermatitis. Patch testing did not include dimethyl-dimethyl (DMDM) hydantoin or bromonitropropane. Would her eczema improve if the patient avoided all formaldehyde-releasing preservatives?

Fragrances and preservatives found in skin-care products are major culprits in skin-care product allergic contact dermatitis (ACD). Relevance and avoidance of these allergens can be tricky when one considers the choices of available personal care products on the market today and the impressive number of products each person uses on a daily basis. The average woman uses 12 personal care products on a daily basis, which encompass a total of 168 unique ingredients.¹ The average man uses 6 personal care products daily with a total of 85 unique ingredients.¹ Not surprisingly, the rates for positive patch test reactions for skin-care product ingredients are rising.² Clinicians involved in the diagnosis and treatment of ACD must be prepared to answer questions from patients concerning the relevance and avoidance of skin-care product allergens.

Patch testing remains the most useful objective tool used by physicians to discover allergens causing ACD. Patch testing involves more than just applying allergens to the patient's back and reading the results. The process of patch testing involves obtaining a thorough history and physical examination, choosing the correct allergens to test, conducting the patch test properly,

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interpreting the results, determining the relevance of the results, and educating the patient by translating the findings into helpful and practical avoidance strategies. Often, the most challenging steps are determining relevance, educating the patient, and follow-through with allergen avoidance education. We review several pearls and pitfalls of this process, with an emphasis on avoidance of the most common allergens found in skin-care products.

SET EXPECTATIONS EARLY

Before committing to patch testing, patients should know what to expect and why the test is being recommended. Identification of the allergen based only on history and physical examination has been shown to be inadequate, only discovering the allergen in 29% to 54% of cases.³ Overall, however, patch testing has been shown to be cost effective. In 1989, the cost of hypothetically patch testing everyone in the United States with dermatitis/eczema was estimated to save approximately \$40 to \$90 million a year when compared with cost of treatment.⁴ Studies suggest that early patch testing also improves quality of life in patients with chronic ACD.⁵ Furthermore, patch testing is a safe and effective process, and most patients perceive a benefit in skin treatment.⁶

From the outset of discussing the performance of patch testing, patients should be counseled that the testing may not reveal a specific allergen as the cause of their dermatitis. Because patch testing is a time-consuming and labor-intensive process, patients should know the time required and the cost of the patch test before it is undertaken. The price ranges from \$4 to \$29 per allergen patch, depending on the insurance carrier and the type of patch test used. Setting realistic expectations early is important to prevent dissatisfaction among patients in whom no relevant allergens are found. Clinicians should also consider providing general avoidance strategies of common allergens rather than immediately proceeding to patch testing, especially in limited eczema or of short duration.

ALLERGENS: FIRST BECOME FAMILIAR

Clinicians interpreting patch tests should become familiar with the allergens of the patch test series they administer. This knowledge is critical because it increases the likelihood of determining potential relevance. Optimally, primary care dermatologists and other health care providers who manage allergic contact eczema should know the sources of skin-care product allergens to facilitate allergen

avoidance. It is the unfortunate patient who has gone to the trouble of having undergone patch testing, but does not have a thorough understanding of the known allergens or how to avoid them.

An excellent resource for clinicians who desire to learn overview concepts about common allergens is found in *Contact Allergy: Alternatives for the 2007 NACDG Standard Screening Tray*.⁷ Avoidance of skin-care product allergens specific to a given patient can be readily accomplished by using only those products recommended by the customized shopping list generated by the Contact Allergen Replacement Database (CARD, discussed later).

Studies over the years have identified the most common allergens causing ACD.^{2,8} The North American Contact Dermatitis Group (NACDG) and the Mayo Clinic have published the largest series analyzing patch testing results for North America. A comparison of the most recent top 10 allergens causing ACD, published by the NACDG and the Mayo Clinic, is listed in **Table 1**. Many of the top allergens identified by the Mayo Clinic Contact Dermatitis Group (MCCDG) and the NACDG are found in skin-care products and cosmetics.

The allergens can be categorized into functional groups of similar allergens (**Box 1**). Fragrances and preservatives encompass a large percentage of relevant allergens overall, and are the most common skin-care product related causes of ACD.⁸ The following sections serve as a brief review of several common fragrance and preservative allergens, including helpful avoidance tips.

Fragrances

Fragrances are a common ingredient in skin-care products, with about 3,000 different fragrances used in cosmetics.⁹ Specific fragrance formulas are not required to be written on the ingredients list of cosmetic products, because the Fair Packaging and Labeling Act consider them trade secrets.⁷ Frequently, they are only listed as “perfumes,” “colognes,” “aroma chemicals,” “masking fragrance,” “essential oils,” or “toilet water.”¹⁰ The lack of information regarding fragrances can be a sizable frustration for any patient suffering from ACD. Furthermore, labels such as “unscented” and “hypoallergenic” and even “fragrance-free” do not guarantee that the product is truly free of all fragrances. “Unscented products” may still contain masking fragrances. Some companies label their products as “fragrance-free” despite containing natural fragrances, or containing a fragrance that is also acting as a preservative or emulsifier.⁷ The main

Table 1
Top 10 Allergens from the North American Contact Dermatitis Group (NACDG) and the Mayo Clinic Contact Dermatitis Group (MCCDG)

10 Most Common Allergens NACDG	10 Most Common Allergens MCCDG
Nickel sulfate	Nickel sulfate
Neomycin	Balsam of Peru
Balsam of Peru	Gold sodium thiosulfate
Fragrance mix	Neomycin
Thimerosal	Fragrance mix
Gold sodium thiosulfate	Thimerosal
Quaternium-15	Cobalt chloride
Formaldehyde	Formaldehyde
Bacitracin	Benzalkonium chloride
Cobalt chloride	Bacitracin

screening tools used to evaluate for fragrance allergy are balsam of Peru (BOP), fragrance mix I (FM I), and fragrance mix II (FM II). Some patch test providers offer specialized series such as a cosmetics series, botanic series, or fragrance series, all of which may detect additional fragrance allergens.

BOP is an aromatic fluid that comes from a tree native to El Salvador.⁷ It is a natural mixture of resins and essential oils, consisting of 6 components (**Box 1**). BOP is not found in skin-care products today, but any of the 6 components can be used individually as fragrances and flavorings in foods and oral preservatives.¹¹ BOP has many synonyms, including China oil, Peruvianum, Peruvian balsam, Indian balsam, Honduras balsam, Black balsam, balsamum, and Surinam balsa.¹⁰ Uses of BOP in skin-care products and potential cross-reacting substances are summarized in **Table 2**.

Certain foods have chemical ingredients identical to the components of BOP, and case reports have shown a flare of dermatitis in BOP-sensitive patients.¹² These foods include citrus fruits, tomatoes, sweets, alcoholic beverages, vermouth, dark-colored sodas, and spices (cinnamon, cloves, curry, vanilla).⁷ Continued dermatitis in a patient with sensitivity to BOP, despite avoidance of its topical components, warrants a trial of dietary restriction of such food.

FM I is another screening tool, made up of the 8 fragrances and an emulsifier listed in **Box 1**. Historically, FM I was able to identify 70% to 80% of individuals allergic to fragrances.¹³ Furthermore, the 2 main screening tools for fragrances, FM I and BOP, have been estimated in the past to have detected approximately 90%

of fragrance allergies.¹⁴ With a rising number of new fragrance formulas being produced, the current estimates for the screening ability of BOP and FM I is much lower, only around 60%.⁷ As a result, new screening allergens are being tested for more accurate detection of fragrance sensitivity. FM II is thus being incorporated into many standard series, adding 6 fragrance antigens, as listed in **Box 1**.

Ideally, patients with fragrance allergies should avoid any product that lists any fragrances and potential cross-reactors, or a product with an incomplete listing of the ingredients such as “other ingredient,” or only listing active ingredients. In addition to using traditional allergen avoidance sheets to guide patients on allergen avoidance, use of a computer-generated shopping list free of the patient’s allergens can ease the process, especially when facing the broad allergen category of “fragrance.” Specifically, the Contact Allergen Replacement Database (CARD) generates a list of skin-care products free of known patient allergens. For example, on entering “fragrance” into CARD, the default programming eliminates all fragrances and potential cross-reactors of fragrance. However, botanicals and other fragrance-related allergens without a high risk for potential cross-reaction with fragrance are able to be optionally included.

Two of the scenarios given at the beginning of the article are examples of patients allergic to specific fragrance allergens but who are reluctant to give up all fragrances. Scenario 1 illustrates a patient with trunk, arm, and leg dermatitis in a setting of FM I allergy. This patient wishes to use other products with fragrances (eg, tea tree oil and ylang ylang) that are not included in FM I.

Box 1
Groupings of common allergens

Most Common Allergen Groups

Metals

- Nickel
- Gold sodium thiosulfate
- Cobalt chloride

Topical antibiotic preparations (Neomycin and Bacitracin)

Fragrances

Balsam of Peru

- Cinnamic acid
- Benzoyl cinnamate
- Benzoyl benzoate
- Benzoic acid
- Vanillin
- Nerodilol

Fragrance Mix I

- α -Amyl cinnamic alcohol
- Cinnamic alcohol
- Eugenol
- Cinnamic aldehyde
- Hydroxycitronellal
- Geraniol
- Isoeugenol
- Oak moss absolute
- Sorbitan sesquioleate (emulsifier)

Fragrance Mix II

- Hydroxyisohexyl 3-cyclohexene carboxaldehyde
- Citral
- Farnesol
- Coumarin
- Citronellol
- α -Hexyl cinnamal

Preservatives

Formaldehyde

Formaldehyde releasers

- Quaternium-15
- 2-Bromo-2-nitropropane-1,3-diol
- Diazolidinylurea
- Imidazolidinylurea
- DMDM hydantoin

Benzalkonium chloride

Thimerosal

Table 2
Balsam of Peru

Balsam of Peru Uses

- Cleansing cloths
- Antiperspirants/deodorants
- Hair sprays, gels, tonics, and lotions
- Hair colorants/"permanents-relaxers"
- Soaps/cleansers
- Shampoos/conditioners
- Moisturizers
- Make-up
- Sunscreens
- Perfumes/colognes/aftershaves
- Flavorings

Cross-reactants

- Balsam of Tolu
- Benzoin
- Benzyl acetate
- Benzyl alcohol
- Cinnamic alcohol /cinnamic aldehyde
- Cinnamon oil
- Clove oil
- Diethylstilbestrol
- Essential oils of orange peel
- Eugenol
- Propolis

simplify management by counseling the patient that rinse-off products may be less likely than leave-on products to cause ACD. However, this patient's products, including the rinse-off soap, may contain allergens to which the patient is highly sensitive, but that simply have not been identified. Additional patch testing to the product in question or to a broad cosmetic/botanic or fragrance supplemental series could be considered if any of the product ingredients are contained in the supplemental series. If the patient has fully recovered from the dermatitis, a trial-and-error method can be performed by applying the product (in this case, just the lotion) to the forearm in the same small area twice daily for 1 week. If no dermatitis develops, the product may be considered safe to use.

In scenario 2, a patient with hand eczema and allergy to BOP wishes to use Hawaiian Bath and Body Pineapple Soap and tea tree oil skin products for himself, and wants to apply Vick's VapoRub to his son's chest when he gets a cold. This patient needs to know that he is at an increased risk for flares of his dermatitis on exposure to any fragrance-containing product. Ideally, all

Several approaches may be taken: If the patient is recovering from moderate to severe ACD, then guiding the patient away from all fragrances while she recovers is the best option. It is tempting to

fragrances should be avoided. Although none of these products has the ingredients contained in BOP, the soap contains orange peel oil, which has been shown to cross-react with BOP. Tea tree oil cross-reactivity with BOP is less predictable, and thus, optimally, the patient would be patch tested to tea tree oil to understand more fully the safety of its use. Alternatively, he could employ a use test on his forearm as described above. Vick's VapoRub cream contains several ingredients including menthol, cedarleaf oil, eucalyptus oil, and nutmeg oil. The patient could use gloves while applying it to his son's chest; however, the most conservative course of action would simply be to avoid all fragrance-containing skin-care products.

Formaldehyde-Releasing Preservatives

Formaldehyde-releasing preservatives (FRP) are found in many cosmetic products and are the second most common allergen in skin-care products.⁷ There are 5 main FRPs: quaternium-15, diazolidinyl urea, DMDM hydantoin, imidazolidinyl urea, and 2-bromo-2-nitropropane-1,3-diol (bromonitropropane).⁷ Individuals allergic to formaldehyde may also be allergic to any of the FRPs. Formaldehyde-sensitized individuals can experience an exacerbation of ACD with certain foods, such as aspartame, coffee, cod fish, caviar, maple syrup, shiitake mushrooms, and smoked ham.⁷ Of note, quaternium-15 does not cross-react with other "quaterniums" or quaternary ammonium salts. The patient in scenario 3 continues to suffer from ACD despite avoiding quaternium-15, yet the patient was not tested to all of the FRPs. Most clinicians recommend that any patient allergic to one FRP should avoid all of them. Of note, CARD eliminates all FRPs if formaldehyde or any FRP is entered as an allergen to which the patient is allergic. Physicians may optionally permit inclusion of the FRPs of their choice if they feel comfortable liberalizing patient exposure.

ALLERGENS: CHOOSE CAREFULLY

For patch tests to identify relevant allergens and act as a gold standard, the clinician must decide which allergens to test. With more than 2,800 known allergens available for patch testing,¹⁵ it is impractical and ineffective to test for every one. To help clinicians, standard screening series have been created based on studies showing the most common allergens responsible for ACD. The challenge with "standard" series is that the number and types of allergens vary widely from practice to practice, and they are continuously being updated.² For example, the thin-layer rapid

use epicutaneous test (TRUE test) is a commercial patch test used by 74% of dermatologists who perform patch tests.¹⁶ The manufacturer of the TRUE test recently expanded the number of allergens tested, bringing the total to 29. In comparison, the NACDG uses 65 allergens and the MCCDG uses 74 allergens in the screening tray.⁸

Clinicians who perform patch testing must choose practical screening series that do not miss relevant allergens. Very large series can be expensive, difficult to maintain, and impractical to place on the patient's skin. However, smaller screening series have been shown to miss relevant allergens and may not adequately evaluate the patient.² For instance, the TRUE test only identifies about two-thirds of relevant allergens and is more likely to give false-negative reactions when compared with the Finn Chambers.^{7,17} Broad-standard series, such as that used by the NACDG, may not always detect all allergens (16.7% of patients had relevant allergic patch test reactions to supplemental allergens not identified in the NACDG standard series).⁸ The TRUE test is used by the majority of general dermatologists and allergists who patch test, because it is a good starting point, more affordable, and conveniently produced on ready-to-use chambers.

When patients continue to struggle with dermatitis after initial patch testing, they may also need expanded patch testing of contact allergens outside the standard series based on history, occupation, or location of the dermatitis. For example, a cosmetic/botanic supplemental series typically contains additional fragrances found in cosmetics and other skin-care products. This series may be indicated in patients using a variety of make-up products or for those who use botanic or "all natural" products.

IS IT REALLY RELEVANT?

Relevance assesses the likelihood that the test-positive allergen is the culprit causing the patient's dermatitis. Relevance reactions are divided into the following categories: no relevance, past relevance, or current relevance. Past relevance describes a positive patch-test result that explains a previous, unrelated episode of ACD. Positive patch tests to nickel and neomycin often present as illustrations of past-relevant reactions, where the patient recalls a prior episode of dermatitis on exposure to an allergen and has subsequently avoided it. For example, patients may recognize that costume jewelry/belt buckles or an over-the-counter antibiotic ointment once induced a rash and they ceased using the product. Current relevance may be further subdivided into 3 categories

(definite, probable, and possible relevance) based on the likelihood that the patch-test positive allergen is causing the ACD. Definite relevance is determined if the patient has a positive patch-test reaction to the suspected object or compound.⁸ Relevance is declared probable if the positive patch test identifies a substance that is a known skin contactant of the patient and the clinical distribution is consistent.⁸ The relevance is possible if the patient was exposed to circumstances in which skin contact with materials known to contain the suspected allergen likely occurred.⁸

Determining the relevance of a positive reaction can be the most difficult part of patch testing and should be approached as a physician-patient team. A detailed list of the occurrences of the allergen in the patient's home and work environments should be studied with the patient. Reviewing the history (including exposures, time course, relapses, and location of the patient's current dermatitis) may aid in the investigation.¹⁸ In addition to the initial encounter, many clinicians have patients complete a worksheet containing detailed information regarding all cosmetics and skin-care products, occupation, and hobbies. Relevance can be verified if the dermatitis clears after the patient removes the patch-test-positive allergen from his or her environment and then reappears after the allergen is reintroduced.

HAVE RESOURCES READILY AVAILABLE

Allergen avoidance resources are vital to a successful outcome with patch testing. They can turn complication and aggravation into compliance and appreciation. One of the greatest pitfalls a clinician could make after a positive patch test is simply handing the patient an allergen information sheet (many available at www.contactderm.org or via allergen vendors) as a substitute for practical face-to-face patient education. This approach may seem quicker in the short term, but it may leave the patient feeling overwhelmed, especially if the allergen is ubiquitous or carries a difficult name with many synonyms. Avoidance begins with thoroughly educating the patient.

Relevant allergens should be discussed in detail, and practical avoidance strategies must be tailored to the patient. Unless the patient has skill sets akin to those of a biochemist, the names of most allergens are foreign and difficult to remember. On average, 50% of relevant patch-test-positive allergens could not be recalled by patients.⁶ Even if the patient remembers the names, finding and avoiding the products that

contain the allergens can be a daunting task. Reviewing 10 to 20 unfamiliar ingredients on every skin-care product can be tedious (especially in patients with presbyopia, given the small print found on most package labels).

Avoidance resources include a general dermatitis handout designed to empirically avoid common allergens (shotgun approach), allergen avoidance handouts specific to a given allergen, and a CARD shopping list or similar product recommendation list.

A general dermatitis handout can serve as a foundation of avoidance strategies for clinically suspected allergic and irritant contact dermatitis patients. The handout should include a selection of specific suggestions for most personal skin-care products and give general recommendations on gentle skin-care measures. If the dermatitis is mild, of short duration, or if the patient is unwilling or unable to pursue patch tests, many clinicians will start with strict adherence to the handout for several months before considering patch testing. The dermatitis handout that is used at Mayo Clinic Arizona is shown in the **Fig. 1** as one of many possible examples. Additionally, CARD can generate a shopping list free of the MCCDG and NACDG top 10 most common allergens, thereby providing "virtual" patch testing. This is particularly helpful for empiric selection of truly hypoallergenic make-up.

Specific allergen avoidance information given in traditional handouts should be provided to the patient, even in the era of computer-generated skin-care-product shopping lists. These allergen sheets normally include the name of the allergen with a brief description of its uses, synonyms, and suggestions on how to avoid it. The physician should demonstrate to the patient the use of these definitional handouts. For example, if the patient is sensitive to methylchloroisothiazolinone/methylisothiazolinone (MCI/MI), the physician should read the patient's liquid soap and shampoo bottles to determine if they contain MCI/MI. If there is no skin-care product identified during the final patch test reading that contains MCI/MI, then the patient should be asked to keep a log of skin-care products and compare this list with the allergen information sheets. Indeed, if this task is overwhelming to the patient, he or she should be instructed to bring all of his or her skin-care products to a subsequent visit for physician review. Since the turn of the 21st century, many clinicians have turned alternatively to a computer-generated shopping list, detailing products that are free of the patient's known allergens and cross-reactors.

CARD, an extensive database comprising 65 skin-care product categories, is a practical

Introduction

Eczema, also known as Dermatitis, is an inflammation of the skin due to dryness irritation or possible external allergy. Eczema/Dermatitis is not contagious.

Some skin care products contain fragrance even though the package says "fragrance free" or "unscented." Therefore, please choose the skin care products as listed below by their exact brand name.

Suggestions

Soaps/Cleansing

- o Vanicream Cleansing Bar®
- o Free and Clear Liquid Cleanser®
- o Aveeno® Moisturizing Bar for Dry Skin, Fragrance Free or Aveeno® Eczema Care Body Wash
- o Oilatum Unscented Soap®
- o Neutrogena Original Formula® Fragrance-Free® (bar or liquid)
- o Any of the shampoos listed in this brochure may be used as your hand or body soap
- o Aveeno® Therapeutic shave gel or Edge® unscented shave gel

Moisturizers

- o Vanicream®, Vanicream Lite®
- o Aveeno® Daily Moisturizing Lotion, Fragrance Free or Aveeno® Eczema Care Moisturizing Cream
- o Plain Vaseline®
- o DML unscented®
 - Use moisturizers twice daily
 - All of the above are OK to use on face
 - To assist with your applying the cream after shower, just blot water off with hand and apply cream. Do not use a towel to dry off.
- o Robathol Bath Oil®

Deodorants

- o Almay® unscented antiperspirants
- o Mitchum® unscented cream antiperspirant and deodorant
- o May use plain cornstarch from grocer

Shampoo

- o Free and Clear Shampoo® and Conditioner
- o DHS Clear Shampoo® and DHS Conditioner®
- o If you have dandruff, use DHS Sal Shampoo or Neutrogena T-SAL Shampoo (*not* T-Gel)
- o Conditioners can be used as "leave on" hair gel

Hairspray

- o Fragrance-Free hairspray such as Free and Clear® Hairspray
- (Caution: Hairsprays labeled as "unscented" may not be fragrance free.)

Laundry and Home Care

- o Unscented laundry detergents (Tide Free®, Cheer Free and Gentle®, All Free and Clear®, Arm & Hammer Unscented®, Wisk Free®, Purex Unscented®)
- o Wash all new clothes and linens five times before using.
- o Old clothes and fabrics are preferred.
- o White vinegar in rinse cycle help to remove soap, and may be used as a general household cleaner.

Hand, Nail & General Skin Care Tips

- o Wear cotton gloves under rubber/vinyl gloves for any activities where hand-wetting is expected.
- o Trim nails short. Long nails are dangerous to skin especially when sleeping.

Sunscreens

- o Vanicream Sunscreen # 30 or 60®

Avoid

Soaps/Cleansing

- o No hot water (use lukewarm).
- o Avoid hot tubs.
- o No rubbing alcohol.

Moisturizers

- o No creams, lotions, oils or powders other than those recommended in this brochure.
- o No Neosporin® products.

Fragrances

- o No perfumes, colognes, after-shave, pre-shave on any part of body / clothing.

Laundry and Home Care

- o No fabric softener in washer.
- o No fabric softener sheets in dryer.
- o No washing machine water softener such as Calgon® (in-house water softeners are acceptable).

Hand, Nail & General Skin Care Tips

- o No wetting of hands more than 5 times a day.
- o No tight fitting clothes
- o No scrubbing! No Loofa! No pumice stone!
- o Do not pull off dead skin. Snip with scissors instead.

Fig. 1. Mayo Clinic General Dermatitis Hanout.

tool to help physicians search through more than 2,500 topical products and more than 6,500 ingredients for skin-care products. CARD is available as an online tool for members of the American Contact Dermatitis Society at www.contactderm.org. The database allows clinicians to enter any number of allergens to generate a printable “shopping list” of skin-care products free of the entered allergens. It eliminates products containing not only the entered allergens, but also those known to have cross- or co-reactions. The main philosophy of CARD is to err on the side of caution. For example, in scenarios 1 and 2 at the beginning of the article, CARD would generate a list of products free from all fragrance-related allergens, not just those in FM I or BOP. For patient 1, the fragrance lotion, rinse-off soap, and laundry detergent would be disqualified from the shopping list. All 3 products mentioned by patient 2 would also be excluded. Fortunately, the database provides hundreds of alternatives that both patients could use. CARD would do the same for the formaldehyde-releasing preservatives by eliminating all 5 of them if 1 allergy was detected on patch test. The physician has the option of allowing many of the prohibited “questionable” cross-reactors to be included in the shopping list. For example, the physician can override CARD’s default action of eliminating all formaldehyde releasers if the patient is only allergic to formaldehyde or a limited number of formaldehyde releasers.

Although use of CARD has not shown a statistically significant difference in clinical disease activity, it has been shown to correspond with much higher level of patient satisfaction while decreasing mean counseling time by the physician.¹⁹

SUMMARY

Evaluating a patient with ACD can be particularly rewarding for both the patient and clinician if the recommendations result in substantial clinical improvement. Clinicians should maintain a high suspicion for personal skin-care products as allergen culprits during such evaluations, and become especially familiar with top skin-care product allergens, including fragrance- and formaldehyde-related allergens. On the clinician’s development of a thorough understanding of the allergens included in their patch test series, patients will be able to have greater trust in the therapeutic recommendations provided. Patient satisfaction and compliance will also increase if meaningful resources, such as specific lists of “safe” personal skin-care products, are provided.

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