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# Optimizing Patch Testing in Clinical Practice: Insights From Amber Reck Atwater, MD

Patch testing can identify the allergens responsible for allergic contact dermatitis and guide curative avoidance, but reliable results require careful technique and thoughtful test design. *Cutis* board member Amber Reck Atwater, MD, discusses how medications, allergen selection, and testing protocols influence results. She also offers practical guidance to help clinicians avoid common pitfalls and improve diagnostic accuracy.

## What evidence exists on the impact of systemic immunosuppressants, biologics, and small-molecule inhibitors on patch test sensitivity and specificity?

**DR. ATWATER:** Guidance on this topic recently was published by the North American Contact Dermatitis Group (NACDG) in the *Journal of the American Academy of Dermatology* in June 2025. The article outlined expert recommendations on whether systemic immunosuppressants, biologics, and small-molecule inhibitors should be held before patch testing, how long they should be withheld, and the maximum recommended doses that can be used during testing.

## How can dermatologists perform patch testing or use alternative diagnostic strategies when systemic therapy cannot safely be withheld?

**DR. ATWATER:** When systemic therapy cannot safely be withheld and patch testing is needed for diagnostic purposes, I typically proceed with the understanding that there is risk of false-negative reactions. If the patient has dermatitis on systemic therapy, it suggests that an allergic response on patch testing is also possible. I generally follow the NACDG guidelines mentioned above, and I hold systemic medications during the week of testing, when possible. If the patient has diffuse dermatitis on systemic therapy and their skin is not clear enough to proceed, I prescribe a prednisone taper and patch test on 10 mg per day for the entire week of testing. In patients taking systemic medications, I typically consider doubtful (+/-) patch test reactions to be the equivalent of a positive (1+) reaction.

One alternative diagnostic strategy is to create a safe list that avoids common allergens and have the patient use only products on this list. If their skin clears with avoidance, it suggests that they may have a contact allergy, and you can proceed with patch testing.

## In patients with a convincing history of contact dermatitis but a negative patch test, what are the most common causes of false negatives, and how do you distinguish those from true negatives?

**DR. ATWATER:** In this setting, the most common cause of a false-negative patch test is not testing the correct allergens. This may occur when too few allergens are tested or when relevant allergens are not tested. Other potential causes of false negatives are incorrect timing of allergen exposure and readings, inadequate allergen adherence, expired allergens, and testing with the incorrect vehicle or concentration of allergen. Some immunosuppressant medications also can cause a false-negative patch test. The only way to distinguish false negatives from true negatives is to be aware of these potential pitfalls and continuously work to avoid errors whenever possible.

## What technical and practical factors most influence false negatives/positives, and what steps do you recommend to standardize and improve test yield?

**DR. ATWATER:** Not testing the correct allergens is a potential pitfall in patch testing. For example, when comparing the 35 allergens in the T.R.U.E. Test (thin layer rapid-use epicutaneous test) to the 80 allergens tested by the NACDG in 2021 to 2022, up to 48% of NACDG allergens are missed when testing with only the T.R.U.E. Test. This argues for comprehensive patch testing and testing of at least 80 to 90 allergens whenever possible. Another example is failure to test allergens relevant to occupational exposures, such as in the case of a hairdresser or nail technician. When patches are not applied for the correct period (48 hours) and the final reading isn't completed in the recommended timeframe (96 to 168 hours), there

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is increased risk for false negatives and positives. Both false negatives and positives can occur if you complete your final reading too early, whereas false negatives may be more likely if you complete your final reading late. Poor allergen adherence, which can be caused by hair, sweat, poor tape application, water, and exercise, also can result in false negatives. Allergen concentration that is too low to elicit a reaction, as well as too little allergen placed into the chamber, also could increase the risk of false negatives. Too much allergen in the chamber or too high a concentration of the allergen can result in false positives.

Topical medications applied to the patch test site prior to or during patch testing, as well as phototherapy, sun exposure, intramuscular triamcinolone, immunosuppressants, biologics, and small-molecule inhibitors can suppress the immune response to allergen exposure.

To identify true positive patch test reactions, use side lighting and palpate the skin. Be aware of the appearance of irritant reactions, patch test reaction variants such as follicular reactions, and the poral reaction, which can be seen with cobalt. Strong knowledge of how to read patch test reactions will decrease your risk of false-positive and -negative reactions. Training and protocols are vital for standardization and accurate patch testing. We train our staff on the technicalities of patch testing and utilize patch test orders and checklists in our office. We take photos to confirm application sites and visually track reactions between visits. We also provide verbal and

written patch test care instructions for our patients and reinforce instructions at each clinic visit.

### What are your top practical tips for dermatologists to maximize diagnostic accuracy and patient safety?

**DR. ATWATER:** My first tip is to develop patch test protocols that are followed by staff and physicians—every time—for every patient. My second tip is to make sure you understand and are comfortable with the patch test process. There are several great patch test resources that can help, including Introduction to Patch Testing, a recently developed CME module in the AAD Learning Center (<https://learning.aad.org/Listing/Introduction-to-Patch-Testing-20366>). There also are patch test training courses and other resources offered by the American Contact Dermatitis Society (<https://www.contactderm.org/>).

### What single guideline change would most improve patch testing?

**DR. ATWATER:** The single guideline change that would most improve the practice of patch testing is removal of payer limitations on the number of patches that can be applied per day. For many payers in the United States, this limit is 80 to 90 allergens, and it is sometimes lower. Limits on the number of allergens that can be applied per day may result in false-negative patch testing (when limits are applied), patient inconvenience (if testing is completed over 2 different application days), and insufficient reimbursement (if more allergens are tested than the limit allows).