



Patch tests

Dermatologists apply patch tests in patients with dermatitis, to find out whether their skin condition may be caused or aggravated by a contact allergy. Patch tests are not the same as skin prick tests, which are used to diagnose hay fever allergy (house dust mite, grass pollens and cat dander). Skin prick tests have very limited value for patients with skin rashes.

The patch testing described here is as it is undertaken in Hamilton, New Zealand. There may be slight differences in methods used at other centres - if you are having patch tests done, ask your dermatologist to explain.

A range of substances can be used for patch testing. A baseline series such as the European Standard Series of allergens (or similar) is applied to nearly every patient, together with specific tests appropriate to the individual. Each substance (known as an allergen) has been tested to find the best concentration to demonstrate an allergic reaction without causing irritation to those who are not allergic to the material.

Sometimes the results can be inconclusive or misleading. Instead of one or two positive reactions, sometimes nearly all test areas become red and itchy. This is known as 'angry back' and is most likely to occur in those with very active dermatitis (false positive result). At other times, there may be little or no apparent reaction to a substance that regularly causes dermatitis in that person (false negative result).

Further testing may be necessary. Patch tests do not always explain the cause of a dermatitis.

Patch testing



Standard patch tests



T.R.U.E.® tests



Several positive results

More images of patch tests ...

The appointments

The first appointment will take about half an hour. Tiny quantities of 25 to 150 materials in individual square plastic or round aluminium chambers are applied to the upper back. They are kept in place with special hypoallergenic adhesive tape. The patches stay in place undisturbed for 48 hours.

At the second appointment, usually two days later, the patches will be removed. Sometimes further patches are applied. The back is marked with an indelible black felt tip pen or other suitable marker to identify the test sites.

These marks must still be visible at the third appointment, usually two days later (4 days after application). The back should be checked and if necessary remarked on several occasions between the 2nd and 3rd appointments.

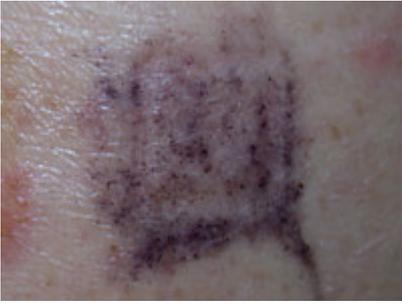
The results

The dermatologist will complete a record form at the second and third appointments (usually 48 and 96 hour readings). The result for each test site is recorded. The system we use is as follows:

- Negative (-)
- Irritant reaction (IR)
- Equivocal / uncertain (+/-)
- Weak positive (+)
- Strong positive (++)
- Extreme reaction (+++)

Irritant reactions include sweat rash, follicular pustules and burn-like reactions. Uncertain reactions refer to a pink area under the test chamber. Weak positives are slightly elevated pink or red plaques. Strong positives are 'papulovesicles' and extreme reactions are blisters or ulcers. The relevance depends on the site and type of dermatitis and the specific allergen. The interpretation of the results requires considerable experience and training.

Essentially negative patch test reactions



Positive patch test reactions



Notes

- Do not expose your back to the sun for four weeks before your patch tests
- Wear old clothing; felt tip pen marks can stain clothes
- Do not swim, rub, or exercise, as the patches may come off
- Keep the back dry, so no baths, showers or unnecessary sweating
- Arrange for someone to remark the test sites with indelible felt tip marker

Bring Your Own Materials For Testing

Discuss the particular substances with which you come into contact with your dermatologist; you may be asked to bring materials from home or work.

- Provide your dermatologist with data sheets of industrial items with which you are in contact.
- Bring or send all chemical items for testing at least a week before the first appointment so that they can be prepared for testing if necessary.
- Only small quantities are required eg. a few drops or grains.
- Label items carefully with their common and chemical names - provide data sheets if available.
- Identified food items and plants (if relevant) should be brought fresh to the first appointment; ice block trays are useful to separate items.
- Bring a selection of cosmetics to be tested (up to ten items) including nail varnish, moisturiser, sunscreen and perfume. Shampoo and soap are not usually tested (these are intended to be washed off and may irritate the skin if left on the skin for two days).
- Bring all prescribed and non-prescribed ointments, creams and lotions that you have used.
- Relevant clothing including rubber gloves and footwear can be tested; about one centimetre of material is needed, taken from seams or other unimportant areas in contact with the affected skin.

Photopatch tests

Some patients have photopatch tests because their dermatitis develops on skin exposed to the sun (photosensitivity). Two sets of perfumes, antiseptics, plant materials and sunscreens may be applied. After removal, one set is exposed to a small dose of ultraviolet radiation (UVA). This is not enough to cause a photosensitivity reaction on its own.

Adverse reactions to patch tests

Positive patch test results are small areas of active eczema / dermatitis. They will be itchy and may require treatment with topical steroid.

- Occasionally patch test reactions persist for several weeks.
- Patch tests may provoke other areas of dermatitis to recur or to appear for the first time.
- Although hypoallergenic tape is used, occasionally people react to all areas in contact with the tape.
- An 'angry back' reaction may arise, particularly in a patient with active dermatitis at the time of testing, or in someone who has multiple positive reactions. 'Angry back' refers to false positives to many or all of the tested allergens.

- Rarely, sensitisation to a new allergen may occur as a result of the test – this is revealed as a reaction occurring around 10 days after the test was applied.
- Re-testing may be required, sometimes one allergen at a time, to confirm or clarify a reaction.

Adverse reactions to patch testing



Extension of dermatitis to surrounding skin



Dermatitis to tape



Angry back

Related information

References:

- Johansen JD, Aalto-Korte K, Agner T, Andersen KE, Bircher A, Bruze M, Cannavó A, Giménez-Arnau A, Gonçalo M, Goossens A, John SM, Lidén C, Lindberg M, Mahler V, Matura M, Rustemeyer T, Serup J, Spiewak R, Thyssen JP, Vigan M, White IR, Wilkinson M, Uter W. European Society of Contact Dermatitis guideline for diagnostic patch testing - recommendations on best practice. *Contact Dermatitis*. 2015 Jul 14. doi: 10.1111/cod.12432. [Epub ahead of print] PubMed PMID: 26179009.

On DermNet NZ:

- Standard series of patch test allergens
- Contact allergens
- Dermatitis
- Allergic contact dermatitis
- Food allergy
- Pompholyx
- Hand dermatitis

Other websites:

- Chemotechnique Diagnostics - Supplier of contact allergens; the site includes patient information about 400 materials
- TROLAB® Hermal patch test allergens – information about 250 allergens
- T.R.U.E. tests® – SmartPractice® Denmark. Information on contact dermatitis and contact allergy testing
- AllergEAZE system of patch tests
- Allergy New Zealand
- Allergic contact dermatitis – Medscape Reference
- Patch testing – British Association of Dermatologists