Skin Prick Testing – Practical guide for efficient implementation in daily practice

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WHEN: Skin prick tests for allergy diagnosis are a well-recognized procedure at any age when an immediate allergy is suspected. In children younger than 3 years of age, prick tests belong into the hands of a specialist.

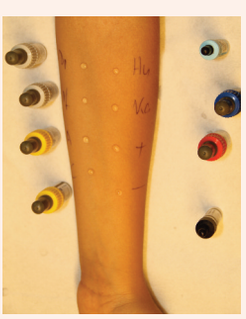
WHY: Advantages are its simplicity of execution, good availability of the various test-allergens, the "immediate" answer and its relatively high validity.

WHEN NOT: In cases of ongoing treatment with histamine antagonists (RESPECT the latency delays below). Reduced validity in immunosuppressed patients, urticaria factitia, diffuse skin diseases with insufficient surfaces of healthy skin (including atopic dermatitis), poor patient cooperation, use of topical steroids on the required skin area or of systemic drug therapies, including oral glucocorticosteroids, immune suppressants as well as, certain sedatives, herbal medicines and psychotropic drugs.

WHAT HAPPENS: The test-substances (allergen solutions) are dropped on the skin before pricking. Pricking carries the allergen to the intradermal mastocytes-bearing IgE antibodies, triggering the release of mediators. Histamine release makes the reaction visible on the skin surface, in form of wheals or redness. In a prick-to-prick test, the needle is first pricked directly into the allergen to be tested, e.g. apple or kiwi fruit, and then into the skin.

STEP BY STEP PROCEDURE

1. Collect the patient's medical history.
2. Confirm the absence of contra-indications.
3. Fill in the record sheet.
4. Inform the patient about the test procedure and expected reactions.
5. Place the patient comfortably, forearm in supine position. Disinfect/degrease.
6. Use a ball-pen for marking the intended application sites on the inner surface of the forearm, using either letters for the abbreviated allergen names or corresponding assigned numbers. The minimal distance between two sites of application should be 3–4 cm.



7. Apply one drop of negative (saline solution) and positive (histamine) controls and of each allergen to be tested onto the skin. Do not apply any drops near veins or tendons.
8. Using a NEW* sterile single-use needle for prick testing or lancet (with 1 mm tip length) at each time, prick rapidly and vertically through the drop, achieving a prick depth of 1 mm. When using special prick test needles, ensure a slight rotation for allergen penetration (the skin should only be pricked, no bleeding should occur).

* Use a new needle for each allergen.

9. After one minute, soak up each single drop by using a tensed paper tissue (the solutions shall not spill over each other).

10. During the test reaction, 15 to 20 minutes, the patient remains under medical supervision (no scratching).
11. Read the immediate reaction 15 to 20 minutes after the beginning of the test: measure the size of the wheals (not the redness) and report the values in millimeter onto the record sheet.

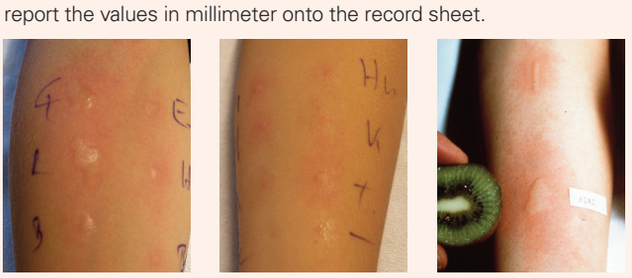


Figure 3 shows the result of a prick-to-prick test: the allergen, e.g. kiwi fruit, was pricked with the prick test needle directly into the skin.

12. Degrease the skin with disinfectant; treated itching wheals with Fenistil-Gel as needed.

The diameter of the negative control wheal should be < 3 mm, that of the positive control ≥ 3 mm.

In addition, the histamine wheal must be 3 mm larger than the saline wheal. Furthermore, the width of the redness surrounding the wheal should be of approximately 2 mm (reflex erythema).

Should these criteria not be fulfilled, the validity of the skin prick test is reduced, requiring cautious interpretation.

RESPECT:

- Stop histamine (H1)-blockers (cave, including cough medications containing antihistamines) and leukotriene-receptor-antagonists at least 3 days prior to testing. In cases of a shorter off-drug period, observe the reaction to the positive histamine control first.
- Execute the test rapidly to ensure similar reading times of all individual tests.
- Decide upon your sequence of application once and for all and always proceed in the same manner.
- Store the vials containing the allergen solutions in your preferred order and present them in that order for testing.
- Hold an emergency kit ready for treating a (very rare) systemic reaction.
- A sensitization is not a clinically manifest allergy!

INTERPRETATION:

Semi-quantitative evaluation scale based on wheal diameters. The assessment of the test reaction must always be done in comparison with the reaction to the controls.

Wheal (Ø)	Reading	Assessment
0 mm	-	Negative
<3 mm	(+)	Doubtfully positive (?)
3–4 mm	+	Positive
5–6 mm	++	Strongly positive
>6 mm	+++	Very strongly positive
>6 mm, diffuse (e.g. with pseudopods)	++++	

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Remark: This information and table are meant as a general guidance for the practicing family physician. They rely upon official guidelines, while not replacing these, and upon the recommendations from Prof. Dr. P. Schmid-Grendelmeier, Prof. Dr. R. Lauener and Dr. M. Hitzler.