



White paper on peanut allergy: treatment pathway

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Summary

Background Peanuts are a member of the legume family (botanical family Leguminosae) and peanut allergies are the most common cause of food anaphylaxis in many countries. The prevalence of peanut allergy is increasing.

Methods Experts from Germany and Austria performed a standardized literature search and published their consensus recommendations in a White Paper on Peanut Allergy, which this care pathway is based upon, thus, providing a comprehensive diagnosis and treatment algorithm.

Results The most important diagnostic key elements include a detailed clinical medical history, evidence of peanut-specific sensitization by means of skin prick

testing and/or in vitro determination of the peanut (extract)-specific IgE and/or the molecular component diagnostics (most important Ara h 2-specific IgE, sometimes also Ara h 1-, 3-, 6-, 8- and 9-specific IgE) as well as the gold standard, the double-blind, placebo-controlled food challenge. The diagnostic algorithms were created for the following constellations: Suspected primary peanut allergy with a clear history of systemic immediate-type reaction, suspected primary peanut allergy with questionable symptoms, suspected secondary (possibly pollen-associated) peanut allergy with a history of solely oropharyngeal symptoms and incidental finding of sensitization and no peanut ingestion so far.

Conclusions After established diagnosis the standard of care is counseling to avoid peanut contact and prescription of emergency medications (oral antihistamines, oral steroids, inhaled β_2 -agonists, injectable intramuscular epinephrine) as needed. Instruction on the use of these emergency medications should be provided. A preparation for oral immunotherapy (OIT) for 4 to 17 years old peanut allergic children/adolescents has been recently approved by the regulatory authorities. OIT for peanut allergy shows high efficacy and an acceptable safety profile, improves quality of life, and health economic aspects. Thus it offers a therapeutic option for peanut allergic children and adolescents.

Keywords Ara h2-specific IgE · Oral food challenge · Diagnostic algorithm · Oral immunotherapy (OIT)

Peanut allergy

Compared to most other foods, peanut has a particularly high allergenic potential and can therefore reduce the quality of life ongoing of those affected [1]. Thus, it is important to have targeted diagnostics that

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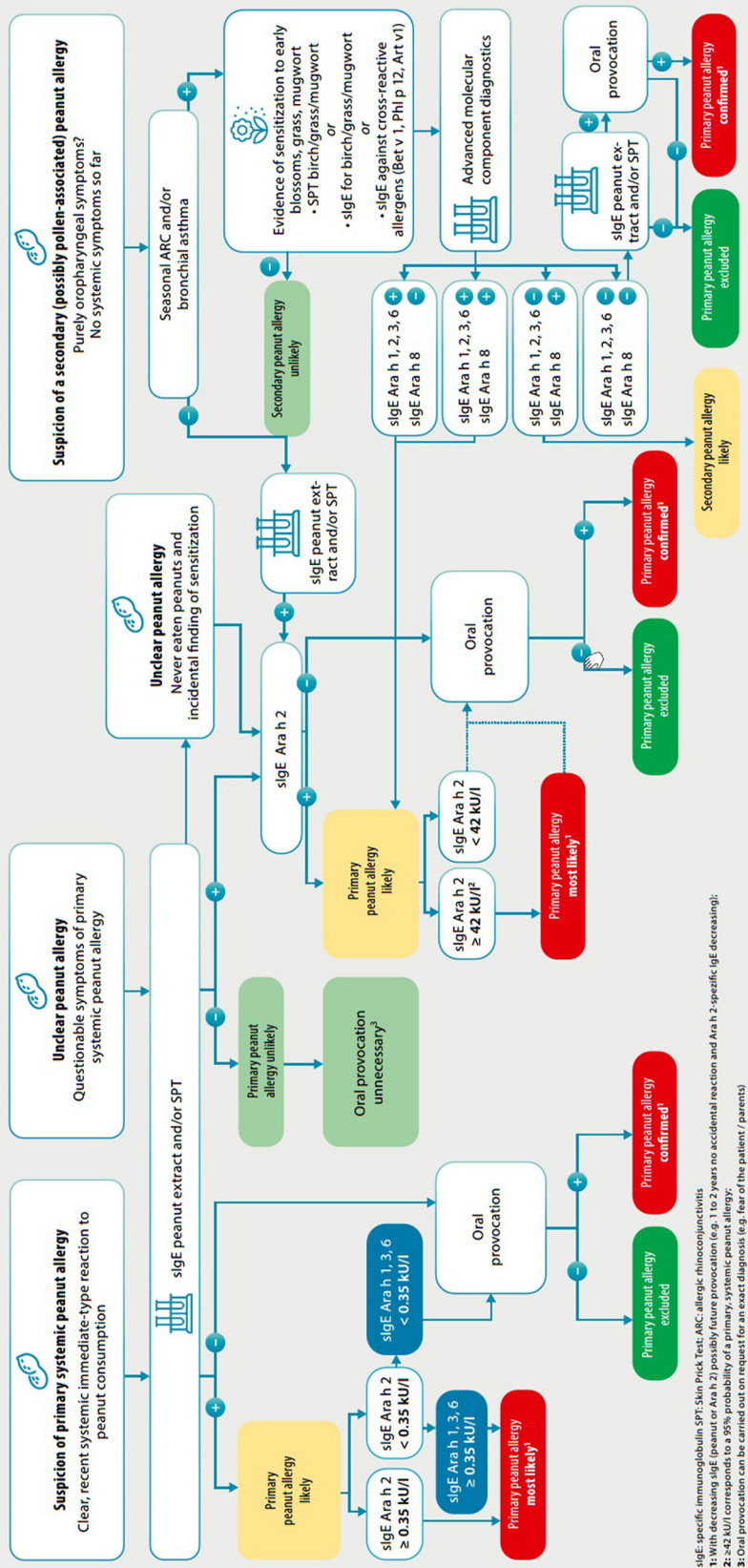
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Medical history and diagnostics



Management and therapy

Identifying and treating allergic reactions

- Training of the patient/parent/ immediate environment in dealing with allergic reactions/anaphylaxis (allergist / AGATE)
- Prescription of an emergency kit
- Handling emergency kit: adrenaline auto-injector, oral H1 antihistamine, glucocorticoid, beta2 adrenoceptor agonist, inhaled adrenaline preparation
- Anaphylaxis pass
- Always carrying the emergency kit with you

Nutritional therapy

- Individual allergen avoidance and adapted to the personal tolerance threshold
- Knowledge of the occurrence of peanuts, especially in processed form
- Understand the meaning of a warning notice
- Situation-related risk assessment as a basis for individual avoidance strategies
- Augmentation factors: physical activity, infections, medication intake, lack of sleep, alcohol consumption

New therapeutical option: oral immunotherapy (OIT)

- Increase of the tolerance threshold for IgE-mediated peanut allergy: protection against allergic reactions after accidental consumption of peanuts
- Individual benefit / risk assessment

Outlook

- Epicutaneous immunotherapy
- Multiple OIT and omalizumab / dupilumab
- Oral mucosal immunotherapy

Fig. 1 Diagnostic, management and treatment pathway for peanut allergy

can safely confirm or exclude a primary peanut allergy. Peanut allergy management, in turn, aims to enable the patients to live well with their allergy in everyday life. In order to achieve this, knowledge of the medical history and diagnostics as well as management and therapy are essential. The treatment algorithm (Fig. 1; for full-size PDF see Supplementary Information) clearly summarizes everything relevant to peanut allergy.

Medical history and diagnostics [2]

The most important diagnostic key elements include a detailed clinical medical history, evidence of peanut-specific sensitization by means of skin prick testing and/or in vitro determination of the peanut (extract)-specific IgE and/or the molecular component diagnostics as well as the gold standard, the double-blind, placebo-controlled food challenge. The flow diagram was created for the following constellations:

- Suspected primary peanut allergy with a clear history of systemic immediate-type reaction
- Suspected primary peanut allergy with questionable symptoms
- Suspected secondary (possibly pollen-associated) peanut allergy with a history of solely oropharyngeal symptoms
- Incidental finding during sensitization testing and no peanut ingestion so far.

Management and therapy—nutritional therapy [3]

- Education about the occurrence of the offending food
- Align avoidance strategies individually according to the tolerance threshold
- Avoidance of peanuts—show the possibilities and limits of the food information regulation
- Maintain or restore quality of life through successful disease management in everyday life
- Meet the worries and fears of those affected and their families
- The risk for experiencing an allergic reaction and the severity of this reaction is dependent on the individual disposition.
- Possible augmentation factors: physical activity, infections, drug intake (e.g., non-steroidal anti-inflammatory drugs), lack of sleep, alcohol consumption

Management and therapy—oral immunotherapy with Palforzia® [4]

- Patients aged 4–17 years with a confirmed diagnosis of primary peanut allergy
- Palforzia (Aimmune Therapeutics Ireland Limited, Dublin, Ireland) ® is a powder (peanut protein as

a defatted powder from *Arachis hypogaea* L., semen).

- Peanuts must continue to be avoided throughout therapy.
- The initial doses as well as each new dose level must be taken under medical supervision.

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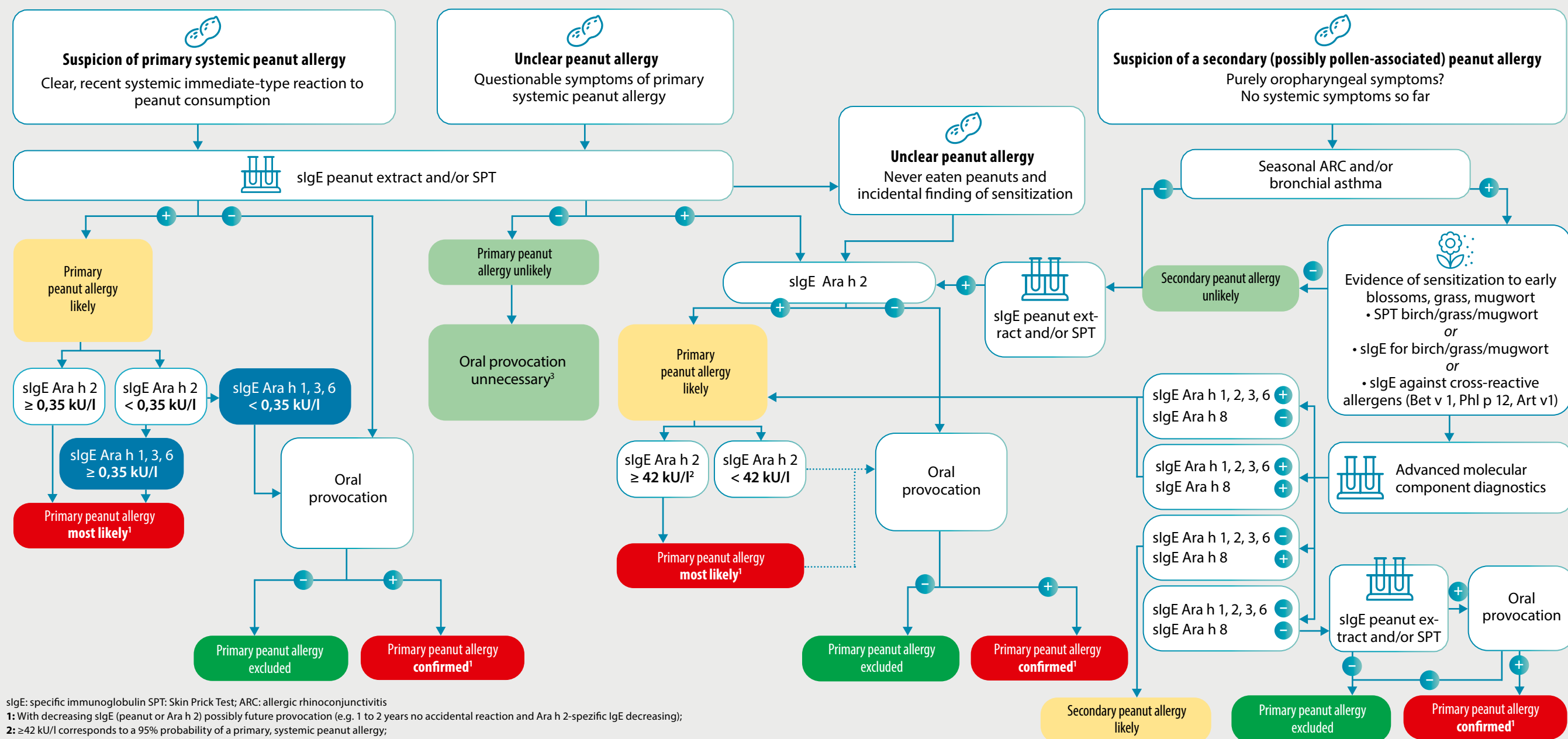
Conflict of interest L. Klimek reports grants and personal fees from Allergopharma, grants and personal fees from MEDA/ Mylan, personal fees from HAL, grants from ALKAbelló, grants and personal fees from LETI Pharma, grants from Stallergenes, grants from Quintiles, grants and personal fees from Sanofi, grants from ASIT biotech, grants from Lofarma, personal fees from Allergy Therapeutics, grants from AstraZeneca, grants from GSK, grants from Immunotk, personal fees from Cassella med, outside submitted work; and membership: AeDA, DGHNO, German Academy of Allergology and Clinical Immunology, ENT-BV, GPA, EAACI. L. Lange reports on consultancy fees from Aimmune, DBV Technologies and Nestlé. He has given paid lectures for Aimmune, DBV Technologies, Nestlé and Nutricia. K. Blumchen reports personal fees from ThermoFisher Scientific; grants, personal fees, and non-financial support from Aimmune Therapeutics; grants, personal fees, and nonfinancial support from DBV Technologies; grants from Hipp GmbH; personal fees from Novartis; personal fees from Allergy Therapeutics; personal fees from HAL; personal fees from ALK; personal fees from Allergopharma; personal fees from Nutricia; personal fees from Nestlé; personal fees from Bausch and Lomb, outside the submitted work. L.A. Blum, F. Klimek, K. Nemat and I. Reese declare that they have no competing interests.

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Medical history and diagnostics



slgE: specific immunoglobulin SPT: Skin Prick Test; ARC: allergic rhinoconjunctivitis

1: With decreasing slgE (peanut or Ara h 2) possibly future provocation (e.g. 1 to 2 years no accidental reaction and Ara h 2-specific IgE decreasing);

2: ≥ 42 kU/l corresponds to a 95% probability of a primary, systemic peanut allergy;

3: Oral provocation can be carried out on request for an exact diagnosis (e.g. fear of the patient / parents)

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