



## Complete Summary

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### GUIDELINE TITLE

Paediatric food hypersensitivity and allergy.

### BIBLIOGRAPHIC SOURCE(S)

Finnish Medical Society Duodecim. Paediatric food hypersensitivity and allergy. In: EBM Guidelines. Evidence-Based Medicine [Internet]. Helsinki, Finland: Wiley Interscience. John Wiley & Sons; 2008 Apr 10 [Various]. [13 references]

### GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Finnish Medical Society Duodecim. Food hypersensitivity and allergy. In: EBM Guidelines. Evidence-Based Medicine [Internet]. Helsinki, Finland: Wiley Interscience. John Wiley & Sons; 2006 Dec 13 [Various].

## COMPLETE SUMMARY CONTENT

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## SCOPE

### DISEASE/CONDITION(S)

Food hypersensitivity and allergy

### GUIDELINE CATEGORY

Diagnosis  
Evaluation  
Management  
Prevention  
Risk Assessment

## **CLINICAL SPECIALTY**

Allergy and Immunology  
Family Practice  
Internal Medicine  
Nutrition  
Pediatrics  
Preventive Medicine

## **INTENDED USERS**

Dietitians  
Health Care Providers  
Physicians

## **GUIDELINE OBJECTIVE(S)**

Evidence-Based Medicine Guidelines collect, summarize, and update the core clinical knowledge essential in general practice. The guidelines also describe the scientific evidence underlying the given recommendations.

## **TARGET POPULATION**

Children at risk for and with known food hypersensitivity and allergy

## **INTERVENTIONS AND PRACTICES CONSIDERED**

### **Prevention**

1. Identification of risk groups and preventative measures
2. Exclusive breast feeding for at least 4 to 6 months
3. Partially hydrolysed formulas

**Note:** Guideline developers considered but did not recommend maternal antigen avoidance during lactation to prevent atopic eczema in the child and maternal avoidance of food allergens during pregnancy to prevent atopic manifestations in the infant.

### **Diagnosis/Evaluation**

1. Evaluation of signs and symptoms of food allergy
  - Gastrointestinal signs and symptoms
  - Cutaneous eruptions
  - Exacerbation of asthma
2. Diagnosis of food hypersensitivity
  - Allergy history
  - Suspicion of previous anaphylaxis
  - Elimination and reintroduction trials

### **Management**

1. Elimination of foods

2. Referral to pediatric specialist care
3. Growth monitoring
4. Vaccination considerations
5. Re-evaluation of diet over time

**Note:** Guideline developers discussed but did not specifically recommend skin or blood testing, skin prick tests, and patch or epicutaneous tests.

## MAJOR OUTCOMES CONSIDERED

- Allergy prevalence
- Incidence of atopic conditions
- Adverse effects of dietary antigen avoidance on maternal and fetal nutrition

## METHODOLOGY

### METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)  
 Hand-searches of Published Literature (Secondary Sources)  
 Searches of Electronic Databases

### DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The evidence reviewed was collected from the Cochrane database of systematic reviews and the Database of Abstracts of Reviews of Effectiveness (DARE). In addition, the Cochrane Library and medical journals were searched specifically for original publications.

### NUMBER OF SOURCE DOCUMENTS

Not stated

### METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

### RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

#### Levels of Evidence

#### Classification of the Quality of Evidence

Code	Quality of Evidence	Definition
<b>A</b>	<b>High</b>	Further research is very unlikely to change our confidence in the estimate of effect.

<b>Code</b>	<b>Quality of Evidence</b>	<b>Definition</b>
		<ul style="list-style-type: none"> <li>• Several high-quality studies with consistent results</li> <li>• In special cases: one large, high-quality multi-centre trial</li> </ul>
<b>B</b>	<b>Moderate</b>	<p>Further research is likely to have an important impact on confidence in the estimate of effect and may change the estimate.</p> <ul style="list-style-type: none"> <li>• One high-quality study</li> <li>• Several studies with some limitations</li> </ul>
<b>C</b>	<b>Low</b>	<p>Further research is very likely to have an important impact on confidence in the estimate of effect and is likely to change the estimate.</p> <ul style="list-style-type: none"> <li>• One or more studies with severe limitations</li> </ul>
<b>D</b>	<b>Very Low</b>	<p>Any estimate of effect is very uncertain.</p> <ul style="list-style-type: none"> <li>• Expert opinion</li> <li>• No direct research evidence</li> <li>• One or more studies with very severe limitations</li> </ul>

GRADE (Grading of Recommendations Assessment, Development and Evaluation) Working Group 2007 (modified by the EBM Guidelines Editorial Team).

## **METHODS USED TO ANALYZE THE EVIDENCE**

Review of Published Meta-Analyses  
Systematic Review

## **DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE**

Not stated

## **METHODS USED TO FORMULATE THE RECOMMENDATIONS**

Not stated

## **RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS**

Not applicable

## **COST ANALYSIS**

A formal cost analysis was not performed and published cost analyses were not reviewed.

## **METHOD OF GUIDELINE VALIDATION**

Peer Review

## **DESCRIPTION OF METHOD OF GUIDELINE VALIDATION**

Not stated

# **RECOMMENDATIONS**

## **MAJOR RECOMMENDATIONS**

The levels of evidence [A-D] supporting the recommendations are defined at the end of the "Major Recommendations" field.

- Food hypersensitivity includes both food allergy and food intolerance.
- In food allergy, the symptoms are related to an immunological mechanism. A skin-prick test or tests for specific immunoglobulin E (IgE) antibodies in the serum may be used in the determination of an immunological mechanism.
- Most infants suffering from food allergy to nutritionally important foods (milk, cereals) recover at pre-school age.
- School-aged children may develop allergy to vegetables or fruit.

### **Epidemiology**

- Up to half of the parents of children younger than 2 years of age associate some of the child's symptoms with food, however, most suspicions of allergy dissolve with time (Eggesbo et al., 1999).
- In a survey of school children, 24% reported to be or to have been allergic to food at some point (Csonka et al., 2000).

### **Prevention**

- To prevent allergies, the risk groups should be identified reliably, and an efficient preventative measure should be available (Csonka et al., 2000).
- Maternal antigen avoidance during lactation has no effect on the incidence of atopic eczema in the child according to one small study (Kramer & Kakuma, 2006) [**D**].
- Maternal avoidance of food allergens during pregnancy (third trimester) does not prevent atopic manifestations in the infant (Kramer & Kakuma, 2006) [**C**].
- All studies concerning prevention have been carried out in children at high risk of atopy, and the evidence has been reviewed to be of poor quality (Brand, Vlieg-Boerstra, & Dubois, 2007).
- Exclusive breast feeding for at least 4 to 6 months is recommended, but the allergy-preventing effect of this is modest at best (Kramer & Kakuma, 2002).
- Partially hydrolysed formulas are effective when breast-feeding is not available for high-risk infants (at least one first-degree relative with correctly

diagnosed allergy) (Baumgartner et al., 1998; Osborn & Sinn, 2003) [A]. These products may not be marketed in all countries.

### **Causes of Food Allergy**

- In principle any food can cause allergy. There is no allergy-safe diet.
- If a baby does not eat a particular food substance, he/she cannot become sensitised to it. He/she also cannot develop tolerance to it.
- See the Finnish Medical Society Duodecim guideline "How to Investigate Symptoms Associated with Foods?"

### **Cow's Milk and Cereal Allergies**

- Nutritionally most significant (Räsänen & Ylönen, 1992)
- Mainly seen in young children
- Rarely after pre-school age
- Symptoms caused by these foods usually appear in infancy soon after the food has been introduced to the child's diet.
- See the Finnish Medical Society Duodecim guideline "Cow's Milk Allergy."

### **Allergens Related to Birch Pollen Allergy**

- Allergens associated with birch pollen allergy include the following:
  - Root vegetables: potato, carrot, celery, parsnip
  - Fruit and other vegetables: apple, pear, peach, kiwi fruit, plum, mango, tomato, sweet pepper
  - Spices: mustard, caraway, turmeric, ginger, cinnamon
  - Others: walnut, almond
- In most cases preparation of vegetables (cutting, freezing, and especially cooking) removes the allergenicity, the majority of persons allergic to birch pollen can eat cooked vegetables.
- After pre-school age, the avoidance of allergens should be based on symptoms, not test results. Due to cross-reactions, the number of false-positive results is high in skin-prick and radioallergosorbent test (RAST) testing, and they are therefore not recommended.

### **Other Allergens**

- Peanuts, soya, fish, shellfish, eggs, wheat, barley, oats, rye, buckwheat, banana, avocado
- Linseeds, sesame seeds and poppy seeds
- Mushrooms, especially shiitake
- Causes of intolerance (no allergy mechanism)
  - Strawberry, citrus fruit, chocolate, tomato
- Alcoholic drinks
  - Cereal allergens, aniseed, colouring agents, metabisulphite, benzoic acid

### **Anaphylactic Reaction**

- May, in theory, occur with any food

- In infants with milk and egg allergy
- Possible allergens both in children and adults: fish, shellfish, peanuts, soya, celery, kiwi fruit, linseeds and sesame seeds

### **Symptoms of Food Allergy**

- Typically several symptoms are manifested: stomach pain, diarrhoea, cutaneous eruptions, etc.
- In 50% to 80% of infants admitted to hospital with atopic eczema (i.e., with severe eczema, a food allergy is found to aggravate the symptoms) (Isolauri & Turjanmaa, 1996).
- Atopic eczema can also be exacerbated by air-borne allergens: birch pollen in the spring, grass pollen suspended in water and contact with pets (eczema in areas exposed to air is suggestive).
- Eczema can also occur in contact areas (touching a dog, peeling potatoes).
- Of gastrointestinal symptoms, the most obvious one is contact allergy around the mouth and lips which appears almost immediately after ingestion and is easy to connect with the food (tomatoes, citrus fruit and apples in those allergic to birch pollen).
- Other symptoms that appear soon after ingestion of the food (loose stools, vomiting) are also rather easy to connect with the allergen, especially if the association occurs repeatedly.
- Delayed gastrointestinal reactions, or worsening of the atopic eczema, are very difficult to associate with a particular food.
- The frequency of bowel motions varies greatly between individuals. For example, in infancy defecation 10 times a day or once a week may be normal (provided that the child is well and developing normally).
- All changes in the diet can cause temporary changes in bowel function, as can courses of antibiotics.

### **Other Symptoms**

- Food hypersensitivity may also be linked to exacerbation of asthma.
- There is no evidence supporting an association between food (hypersensitivity) and migraine, arthritis, cystitis or nephritis.

### **Diagnosis of Food Hypersensitivity**

- See also the Finnish Medical Society Duodecim guidelines "Cow's Milk Allergy" and "How to Investigate Symptoms Associated with Foods" ("Food allergy in children," 2005; Vandenplas et al., 2007).
- As a basic rule, skin or blood testing of older children for food hypersensitivity should be avoided unless there is a strong suspicion.
- The diagnosis should be based on elimination and reintroduction trials (see clinical algorithm, "Diagnostic work-up of food allergy" in the original guideline document). For the nutritionally important foods (milk and wheat in young children) a more formal elimination-challenge test should be carried out (e.g., in the fashion described below).
  - The suspected food(s) are eliminated from the diet totally (for 1 to 2 weeks).
  - The onset/disappearance of symptoms is recorded in a symptom diary.

- Reduction or disappearance of symptoms supports food allergy, but is not diagnostic. The food needs to be reintroduced (challenge).
- A small amount of the food is reintroduced to the diet and, as long as the child remains asymptomatic, the amount is increased gradually to the normal (age-adjusted) amount consumed daily.
- Symptoms usually reappear within a week (symptom diary) after consuming large enough amounts.
- History reveals immediate reactions. Foods that are nutritionally less important need not be tested but can be eliminated from the diet and reintroduced at a later stage.
- Suspicion of anaphylactic reactions caused by food: careful analysis of the causative factor. NEVER instruct the patient to reintroduce the suspected food at home.
- Positive skin prick tests or the presence of specific IgE antibodies are not enough for a diagnosis. IgA and IgG antibodies are detected in everyone and are not useful in diagnostics.
- Patch or epicutaneous test is a method used in scientific research with selected patients in specialist settings. It is not a routine test method.

### **Follow-Up**

- Specific items of food that are not nutritionally important may be eliminated when the association between the symptoms and food is clear. Elimination reintroduction can be carried out at home whilst keeping a symptom diary.
- There are no adequate trials on how these children should be followed up. Clinical experience therefore dictates the routines.
- Indications for referral to specialist care
  - An infant with widespread eczema or worsening symptoms
  - An infant with difficult or perplexing symptoms, and the parents are convinced of food allergy
  - Failure to thrive
  - Diet limited by the parents to dangerously few foods
  - An older child needs to be referred if the diet threatens to become too limited
- In primary care
  - The growth of a child on an elimination diet is monitored by growth charts.
  - Vaccinations are given according to the normal programme. Allergy to eggs does not prevent vaccination unless the child has had an anaphylactic reaction to eggs (Aickin, Hill, & Kemp, 1994).
  - The family is encouraged to expand and rationalise the diet towards a normal diet.
  - The child's diet should be re-evaluated at 5 years of age at the latest: is the avoidance of certain foods based on an elimination-challenge test? Should a specialist re-evaluate the situation?
  - All elimination diets at school-age should be based on an established diagnosis.

### **Related Resources**

Refer to the original guideline document for related evidence, including Cochrane reviews and other evidence summaries.

## Definitions:

### Classification of the Quality of Evidence

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### CLINICAL ALGORITHM(S)

The clinical algorithm "Diagnostic work-up of food allergy" is provided in the original guideline document.

## EVIDENCE SUPPORTING THE RECOMMENDATIONS

### REFERENCES SUPPORTING THE RECOMMENDATIONS

[References open in a new window](#)

## **TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS**

Concise summaries of scientific evidence attached to the individual guidelines are the unique feature of the Evidence-Based Medicine Guidelines. The evidence summaries allow the clinician to judge how well-founded the treatment recommendations are. The type of supporting evidence is identified and graded for select recommendations (see the "Major Recommendations" field).

## **BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS**

### **POTENTIAL BENEFITS**

- Appropriate diagnosis and management of food hypersensitivity and allergy in children
- Prevention of food hypersensitivity and allergy in children

### **POTENTIAL HARMS**

Not stated

## **IMPLEMENTATION OF THE GUIDELINE**

### **DESCRIPTION OF IMPLEMENTATION STRATEGY**

An implementation strategy was not provided.

### **IMPLEMENTATION TOOLS**

Clinical Algorithm

For information about [availability](#), see the "Availability of Companion Documents" and "Patient Resources" fields below.

## **INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES**

### **IOM CARE NEED**

Living with Illness  
Staying Healthy

### **IOM DOMAIN**

Effectiveness

## **IDENTIFYING INFORMATION AND AVAILABILITY**

### **BIBLIOGRAPHIC SOURCE(S)**

Finnish Medical Society Duodecim. Paediatric food hypersensitivity and allergy. In: EBM Guidelines. Evidence-Based Medicine [Internet]. Helsinki, Finland: Wiley Interscience. John Wiley & Sons; 2008 Apr 10 [Various]. [13 references]

#### **ADAPTATION**

Not applicable: The guideline was not adapted from another source.

#### **DATE RELEASED**

2004 Sep 15 (revised 2008 Apr 10)

#### **GUIDELINE DEVELOPER(S)**

Finnish Medical Society Duodecim - Professional Association

#### **SOURCE(S) OF FUNDING**

Finnish Medical Society Duodecim

#### **GUIDELINE COMMITTEE**

Editorial Team of EBM Guidelines

#### **COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE**

*Primary Author:* Minna Kaila

#### **FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST**

Not stated

#### **GUIDELINE STATUS**

This is the current release of the guideline.

This guideline updates a previous version: Finnish Medical Society Duodecim. Food hypersensitivity and allergy. In: EBM Guidelines. Evidence-Based Medicine [Internet]. Helsinki, Finland: Wiley Interscience. John Wiley & Sons; 2006 Dec 13 [Various].

#### **GUIDELINE AVAILABILITY**

This guideline is included in "EBM Guidelines. Evidence-Based Medicine" available from Duodecim Medical Publications, Ltd, PO Box 713, 00101 Helsinki, Finland; e-mail: [info@ebm-guidelines.com](mailto:info@ebm-guidelines.com); Web site: [www.ebm-guidelines.com](http://www.ebm-guidelines.com).

#### **AVAILABILITY OF COMPANION DOCUMENTS**

None available

## **PATIENT RESOURCES**

None available

## **NGC STATUS**

This NGC summary was completed by ECRI on August 29, 2005. This summary was updated by ECRI on February 27, 2007. This summary was updated by ECRI Institute on September 27, 2008.

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