Management of a Child with a Food Allergy

Reference: 831
Written by: Nicola Jay & Eleanor Minshall
Peer reviewer: Dr Sibel Ajtai
Approved: July 2018
Review Due: December 2021

Purpose
The aim of this guideline is to provide guidance to health professionals regarding the management of children with food allergies presenting to Sheffield Children’s Hospital.

Intended Audience
This guideline is aimed at all medical staff involved in the management of children with food allergies.
1. Introduction

Increasing numbers of children are presenting with possible food allergies. This is a combination of a definite increase in allergies and increased public awareness and anxiety. Contrary to many parents’ beliefs, not all unexplained urticarial skin rashes are caused by foods or food additives. The most important tool in diagnosing a food allergy is a clear history. The impression from the history can then be backed up by using skin prick tests (SPT) or a blood test (specific IgE testing, previously known as ‘RAST’ testing). Children usually present with symptoms of rash, swelling, vomiting or breathing difficulty (stridor or wheeze) within minutes but up to 2 hours of ingestion of a food. In eczema, gastrointestinal reflux disease (GORD) and other such conditions, the reaction is non IgE mediated and hence delayed. These tests should not be used as a random screen for allergies as they may produce false positive reactions.

2. Intended Audience

This guideline is aimed at all medical staff involved in the management of children with food allergies.

3. Guideline Content

A. TESTS

a) Skin prick tests

These are usually carried out in allergy or asthma clinics. A skin prick test result 3mm greater than the negative control is usually considered ‘positive’. Skin prick tests should be carried out using a specific lancet, not a needle. Discussion with an allergy nurse or referral to allergy clinic is needed to arrange these tests. Please contact the allergy team on 67872 for advice.

b) Specific IgE testing

Tests to a small number of allergens (max 5) can be done on a thumb prick blood sample. Please ask for specific foods and not food mixes. Eg peanut, almond, hazelnut or other suspected nuts NOT nut mix. These tests can be difficult to interpret as a child can have presence of antibodies without allergy. A number of studies have tried to define levels of specific IgE to specific foods, which correlate with definite sensitivity.
please discuss with a member of the allergy team if needed. A falling level may be an indication a child is out growing their allergy.

These tests DO NOT PREDICT acute anaphylaxis to foods. There is debate as to how well they identify causes of chronic GI symptoms. They may have some role in predicting foods that aggravate a child’s eczema but the higher the total IgE level then the more difficult to interpret. If any dietary modifications are to be made related to child’s eczema this should be done in conjunction with regular review with the dermatology team and dietician.

NICE guidelines in food allergy do not support the use of IgG antibodies to foods in any form of food allergy.

B. MANAGEMENT OF AN ACUTE ALLERGIC REACTION

<table>
<thead>
<tr>
<th>SYMPTOMS</th>
<th>SIGNS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MILD</strong></td>
<td></td>
</tr>
<tr>
<td>Burning sensation in mouth</td>
<td>Urticarial rash</td>
</tr>
<tr>
<td>Itchy lips mouth and throat</td>
<td>Angio-oedema</td>
</tr>
<tr>
<td>Feeling warm</td>
<td>Conjunctivitis</td>
</tr>
<tr>
<td>Nausea</td>
<td>Vomiting</td>
</tr>
<tr>
<td>Abdominal pain</td>
<td></td>
</tr>
<tr>
<td><strong>MODERATE</strong></td>
<td></td>
</tr>
<tr>
<td>Cough/wheeze</td>
<td>Bronchospasm</td>
</tr>
<tr>
<td>Loose bowel motions</td>
<td>Tachycardia</td>
</tr>
<tr>
<td>Sweating</td>
<td>Pallor</td>
</tr>
<tr>
<td>Irritability</td>
<td>Stridor</td>
</tr>
<tr>
<td><strong>SEVERE</strong></td>
<td></td>
</tr>
<tr>
<td>Difficulty Swallowing</td>
<td>Severe bronchospasm or stridor</td>
</tr>
<tr>
<td>Difficulty breathing</td>
<td>Laryngeal oedema</td>
</tr>
<tr>
<td>Collapse</td>
<td>Shock</td>
</tr>
<tr>
<td>Uncontrolled defaecation</td>
<td>Respiratory arrest</td>
</tr>
<tr>
<td></td>
<td>Cardiac arrest</td>
</tr>
</tbody>
</table>

i. **MILD ALLERGIC REACTIONS**

Children who experience mild symptoms/signs should be treated with oral antihistamine:

<table>
<thead>
<tr>
<th>Age</th>
<th>Antihistamine</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 month -2 years</td>
<td>chlorphenamine</td>
</tr>
<tr>
<td>1 mg</td>
<td></td>
</tr>
<tr>
<td>2-6 yrs</td>
<td>cetirizine</td>
</tr>
<tr>
<td>5mg</td>
<td></td>
</tr>
</tbody>
</table>
Most children with mild reactions will be sent home from the ED without involving the medical team on call. (See ED Guidelines – 3.7). The discharging Doctor should complete allergy nurse referral form and send in the internal post. Allergy plans and avoidance advice for food allergy are available in allergy file in the M2 nurses room and A&E.

Children with persistent urticaria who are admitted may be treated with oral cetirizine (see BNFC for doses)
Management of a Child with a Food Allergy

**Anaphylaxis algorithm**

**Anaphylactic reaction?**

**Airway, Breathing, Circulation, Disability, Exposure**

**Diagnosis** - look for:
- Acute onset of illness
- Life-threatening Airway and/or Breathing and/or Circulation problems
- And usually skin changes

**Call for help**
- Lie patient flat
- Raise patient’s legs

**Adrenaline**

**When skills and equipment available:**
- Establish airway
- High flow oxygen
- IV fluid challenge
- Chlorphenamine
- Hydrocortisone
- Monitor:
  - Pulse oximetry
  - ECG
  - Blood pressure

**Life-threatening problems:**
- **Airway:** swelling, hoarseness, stridor
- **Breathing:** rapid breathing, wheeze, fatigue, cyanosis, SpO₂ < 92%, confusion
- **Circulation:** pale, clammy, low blood pressure, faintness, drowsy/coma

**Adrenaline (give IM unless experienced with IV adrenaline)**
- IM doses of 1:1000 adrenaline (repeat after 5 min if no better)
  - Adult: 500 micrograms IM (0.5 mL)
  - Child more than 12 years: 500 micrograms IM (0.5 mL)
  - Child 6-12 years: 300 micrograms IM (0.3 mL)
  - Child less than 6 years: 150 micrograms IM (0.15 mL)

**Adrenaline IV to be given only by experienced specialists**
- Titrated: Adults 50 micrograms; Children 1 microgram/kg

**IV fluid challenge:**
- Adult - 500 – 1000 mL
- Child - crystalloid 20 mL/kg
- Stop IV colloid if this might be the cause of anaphylaxis

**Chlorphenamine (IM or slow IV)**
- Adult or child more than 12 years: 10 mg
- Child 6-12 years: 5 mg
- Child 6 months to 6 years: 2.5 mg
- Child less than 6 months: 250 micrograms/kg

**Hydrocortisone (IM or slow IV)**
- Adult or child more than 12 years: 200 mg
- Child 6-12 years: 100 mg
- Child 6 months to 6 years: 50 mg
- Child less than 6 months: 25 mg
The drugs below may also be used if stridor or wheeze is present

- Nebulised Adrenaline - 400 micrograms/kg (0.4 ml/kg of 1:1000 adrenaline, maximum dose 5 mg) for 1 month to 11 years of age (via O₂). Above 11 years of age use 5 mg (5 ml of 1:1000 adrenaline), Nebulised adrenaline should not be relied upon for a systemic effect in which case intramuscular adrenaline should be used,

- Nebulised Salbutamol - 2.5 - 5mg

Any child who has required adrenaline should be admitted overnight for observation, as rebound symptoms may occur. This is for a minimum of 12 hours.

C. ONGOING MANAGEMENT OF CHILDREN SEEN IN ED OR ADMITTED FOLLOWING AN ALLERGIC REACTION (see Algorithms 1 & 2)

Mon-Fri, 9-5pm contact the Specialist Paediatric Allergy Team on Ext 67872 or bleep 092 for the child to be seen pre-discharge. If out of hours, leave a message and the referral will be picked up the next working day

An adrenaline auto-injector should be offered to any child who has had

1. a severe life threatening reaction,
2. any child who has asthma in addition to nut allergy or any child who has unstable asthma and food allergy
3. children who appear to be sensitive to very small amounts of a common food.

The family must be shown how to use it. IT IS ALSO BE HELPFUL TO GIVE THEM A TRAINER PEN TO PRACTICE WITH OR SHOW HOW TO USE IT. If they have not been seen on the ward by one of the allergy team, contact us to arrange an urgent out patient review.

If a child is diagnosed with a food allergy, particularly if they have been given an adrenaline auto-injector, the school should be informed. An allergy action plan is usually sent out and can be obtained from one of the allergy nurses. Patient information sheets regarding food avoidance, adrenaline auto-injector use and general allergy advice can be obtained from the allergy clinic or from one of the allergy nurse specialists. Out of hours they are available in an allergy file, either in the M2 nurses office or A&E.

ADVICE REGARDING FOOD AVOIDANCE

Food avoidance advice may be necessary due to concerns over a specific food having caused a reaction, However, assessment of the nutritional implications of this is paramount. Families may already have made their own dietary alteration that could cause nutritional deficiencies. Children on cow’s milk, wheat or soya free diets or those
avoiding multiple foods should be referred to the dieticians. Information sheets about food avoidance are available from the allergy nurses. If foods are being avoided because of potential effects on eczema this should be done in conjunction with the dermatology team and dieticians.

All children with IgE mediated food allergies should be seen in the allergy clinic. All children who are on dietary restriction due to concerns over food allergy should be seen in the allergy clinic unless primarily a GI problem with ongoing primary care, general paediatric or gastro-enterological follow up. Most children will grow out of their food allergy and may need a food challenge to re-instate it in their diet.

D. FOOD CHALLENGES

Children who have had a previous reaction to foods may consequently outgrow their allergy. This is particularly true for milk and egg; however it can also happen in nut allergy. To prove a child is no longer sensitive they are usually challenged with a small amount of the food on the day ward. Prior to the food challenge starting the child must be examined by a doctor. The challenge may need to be postponed if the child has a wheeze or a skin rash that might make interpretation of a reaction more difficult. The challenge is usually carried out by one of the allergy nurses. Emergency medication should be written up at the start of the procedure and the nurses should contact the SHO covering day care, or the medical registrar on-call in the event of a reaction.

E. EARLY INTRODUCTION OF ALLERGENIC FOODS

1. The UK government currently recommends exclusive breast feeding until around 6 months of age and that some foods (egg, nuts, sesame, fish, shellfish, wheat) are best avoided for the first 6 months of life. This advice however has not been based on any robust clinical data and has not been associated with a reduction in the incidence of food allergy. There is considerable interest currently in the early introduction of food allergens as a means of preventing the development of food allergy. A recent meta-analysis (Ierodiakonou et al., 2016) has suggested that early introduction of egg at between 4 and 6 months of age and subsequent regular ingestion is associated with a reduction in the risk of developing egg allergy (risk ratio 0.56). It also found that early peanut introduction (4 – 11 months of age) with regular ingestion thereafter was associated with a reduced risk of developing peanut allergy (risk ratio 0.29). For peanut, this effect was most marked in high risk infants (those with an egg allergy and/or moderate or severe eczema). However these studies are limited at present and performed under conditions where the subsequent regular ingestion of egg or peanut was supported through regular contact with the trial team. Moreover, there is a risk, particularly in the older infants with moderate or severe eczema that the infants are already sensitized and the initial exposure in the home environment will result in allergic symptoms and potentially anaphylaxis. For this reason, infants seen in the
Management of a Child with a Food Allergy

allergy clinic with a history of food allergy or moderate/severe eczema will be offered screening for sensitization to peanut and offered a supervised peanut challenge with dietary support if appropriate. There is no evidence that delaying the introduction of any specific food beyond 6 months of age helps to prevent food allergy (NIAD, 2014).

F. MANAGEMENT OF POTENTIAL ALLERGY IN SIBLINGS

The tendency to be allergic is inherited. This means that if one child has a food allergy the chance that their sibling will have a food allergy is higher. This is especially the case for peanuts and tree nuts where the estimated prevalence of peanut allergy in younger siblings of children with peanut allergy has been reported to be between 7% and 8.5%.

1. Children under the age of 5 years shouldn’t have whole nuts due to the risk of choking. Nuts in others forms may be eaten if parents wish. It is important to decide if you will have the opportunity to give the second sibling nuts, given that their older sibling is allergic. It is recommended that on the first couple of occasions the parent tries nuts, that they do so at home with some antihistamine available. If this worries the parents too much, then a referral to allergy clinic may be made for a supervised nut challenge. Parents may be counselled that this risk is particularly high in siblings who have an egg allergy and/or moderate or severe eczema.

2. Milk allergy: There is no evidence at present for the use of hypoallergenic formulas in the management of siblings where the older sibling has a milk allergy. If mum is unable to breast feed then a trial of an extensively hydrolysed formula (Aptamil pepti 1, Althera or Nutramigen Lipil 1) would be appropriate. An amino acid formula is unlikely to be needed. A referral to a dietician may be needed and also advice as to when to introduce cow’s milk based formula.

3. General advice to pregnant women with an atopic family history: eat a good varied diet in pregnancy and breast feed if possible. Introduce all allergenic food during weaning at 5-8 months under the umbrella of breast feeding if possible. Ensure that all foods eaten at home are placed in the child’s diet during weaning to reduce the risk of sensitisation. Once you have included a food in your child’s diet then you should continue to do so on a regular basis

4. References


Algorithm 1. The ongoing management and referral of children presenting to the ED or admitted to the ward with urticaria and/or angioedema secondary to acute food or drug triggered allergic reactions

<table>
<thead>
<tr>
<th>Child seen in A&amp;E with a history of an acute food or drug associated allergic reaction (reaction generally occurs within 2 hours, usually associated with the typical urticarial rash and/or angio-oedema)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stop implicated drug/drugs.</td>
</tr>
<tr>
<td>For drug-induced anaphylaxis take a tryptase level as soon as possible (ideally 30 – 90 mins after the reaction) and subsequently on discharge.</td>
</tr>
<tr>
<td>Give appropriate alternative if necessary.</td>
</tr>
<tr>
<td>All adverse drug reactions causing anaphylaxis should be reported via the yellow card system – contact pharmacy.</td>
</tr>
<tr>
<td>Inform specialist Consultant, if under regular clinical review.</td>
</tr>
<tr>
<td>Refer to drug allergy clinic using allergy proforma</td>
</tr>
<tr>
<td>Add a drug allergy alert on eDMS</td>
</tr>
<tr>
<td>If in working hours, discuss with allergy Consultant (via secretaries or allergy nurses)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>History suggestive of acute drug-triggered allergic reaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>All children who have required adrenaline should be referred to the on call medical team for admission for a minimum of 12 hours period of observation as rebound symptoms may occur.</td>
</tr>
<tr>
<td>A tryptase level can be taken acutely in the case of food-induced anaphylaxis (ideally 30 – 90 mins after the reaction) and subsequently on discharge</td>
</tr>
<tr>
<td>These children should ideally see an allergy nurse prior to discharge (bleep 092 or call ext 67872)</td>
</tr>
<tr>
<td>All children should be observed for at least 2 hours in the Department and only discharge once no further symptoms.</td>
</tr>
<tr>
<td>Uncontrolled asthma significantly increases the risk of a severe reaction to food allergens therefore if concerns r.e. poor asthma control, refer to asthma nurse and allergy team.</td>
</tr>
<tr>
<td>Give dietary avoidance advice²</td>
</tr>
<tr>
<td>Provide antihistamines to go home with regular use until symptoms subside</td>
</tr>
<tr>
<td>If necessary prescribe an adrenaline auto-injector³</td>
</tr>
<tr>
<td>Provide appropriate training using trainer device.</td>
</tr>
<tr>
<td>Ideally, parents should have trainer pen to go home with.</td>
</tr>
<tr>
<td>Give an appropriate food allergy treatment plan⁴</td>
</tr>
<tr>
<td>Inform child's school or nursery</td>
</tr>
<tr>
<td>Refer to allergy clinic using proforma</td>
</tr>
<tr>
<td>Further information and 'in hours' referrals (Monday – Friday 9 am – 5 pm) can be made directly to the allergy nurses</td>
</tr>
</tbody>
</table>
Major allergens include milk, egg, peanuts, tree nuts, fish, shellfish (crustaceans and molluscs), wheat and other cereals, soya, sesame/other seeds, celery, sulphites, lupin and kiwi.

Leaflets on milk, egg and nut avoidance are to be found on Intranet. Other useful sources of allergen avoidance can be found on Allergy UK or Anaphylaxis Campaign websites.

Adrenaline auto-injectors must be provided to all patients who present with anaphylaxis, have a past history of anaphylaxis or who have asthma.

Food allergy treatment plans can be found on BSACI website (www.bsaci.org/about/pag-allergy-action-plans-for-children)
Algorithm 2. The ongoing management and referral of children presenting to the ED or to the wards with infection-related, aeroallergen-induced and idiopathic acute urticaria and/or angioedema

Child seen in A&E with a history of infection-related, aeroallergen-induced or idiopathic acute urticaria and/or angioedema

**Acute infection related urticarial and/or angioedema.** History suggestive of recent or current infection (fever, coryzal, dysuria etc). Generally between 1 – 6 years of age with gradual onset and persistence of urticaria/angio-oedema.

- Referral to allergy clinic not warranted.
- Treat any underlying bacterial infection
- Reassure and provide non-sedating antihistamines (cetirizine if over 2 years of age) up to twice daily.
- If severe facial oedema, a short 3 day course of oral prednisolone (0.5 mg/kg; max 40 mg once daily) can be used.

**Acute aeroallergen associated urticaria and/or angioedema.** History of exposure to high levels of aeroallergens such as pollens, animal dander, dusts or moulds.

- Referral to allergy clinic not warranted unless severe atopic disease
- Give regular antihistamines (cetirizine if over 2 years of age) up to twice daily.
- Treat any associated chronic features (eczema, asthma or nasal congestion) with appropriate topical, inhaled or intranasal steroids.
- If severe symptoms, a short 3 day course of oral prednisolone (0.5 mg/kg; max 40 mg once daily) can be used
- Provide aeroallergen avoidance leaflets

**Idiopathic urticaria and/or angioedema.** Ensure acute urticaria not attributable to drug or food, including cross-contamination, particular in children with early-onset eczema or hay fever

- If in doubt discuss with allergy nurses (bleep 092 or ext 67872) during working hours or refer to allergy clinic outside working hours
- Give regular antihistamines (cetirizine if over 2 years of age) up to twice daily until rash and/or swelling resolves.
- Referral to allergy clinic however generally not indicated for acute urticarial and/or angioedema. However, if chronic urticaria (> 6 weeks on a daily or almost daily basis) then refer to allergy clinic using proforma.
Leaflets on pollen, house dust mite, mould and pet allergen avoidance are to be found on Trust intranet. Other useful sources of aeroallergen avoidance can be found on Allergy UK or Anaphylaxis Campaign websites.