ASCIA Health Professional Information Paper

Nutritional Management of Food Allergy

September 2013

This health professional information paper complements ASCIA food allergy e-training for dietitians and other health professionals. The primary purpose of this document is to provide an evidence based, ‘quick reference guide’ to assist dietitians in the management of patients with IgE and non-IgE mediated food allergy.

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1. Adverse food reactions - definitions

1.1 OVERVIEW
The term Adverse Food Reaction relates to any reproducible reaction to a food. Types of adverse food reactions can be classified as follows:

Source: Adapted from Boyce et al. JACI, 2010.

1.2 FOOD ALLERGY
A food allergy is an abnormal immune-mediated reaction to ingested food, resulting in clinical symptoms⁴. Food allergies can be classified by their immune mechanism:

- IgE mediated,
- Non-IgE mediated,
- Mixed IgE and non-IgE mediated.

1.2.1 IgE mediated food allergy:
- Reactions occur when allergens bind to Immunoglobulin E (IgE) antibodies bound to mast cells, resulting in the release of histamine and other inflammatory mediators.
- Symptoms are usually of rapid onset (<30 minutes in children, usually <2 hours in adults).
- Diagnostic tests (e.g. skin prick and blood tests) are usually positive.
- Signs of mild or moderate allergic reactions:
  - Swelling of lips, face, eyes.
  - Hives or welts.
  - Tingling mouth.
  - Abdominal pain, vomiting.
  - Eczema or rashes.
- Anaphylaxis is a severe allergic reaction which is defined by any one of the following signs²:
  - Difficult/noisy breathing.
  - Swelling of tongue.
  - Swelling/tightness in throat.
  - Difficulty talking and/or hoarse voice.
  - Wheeze or persistent cough.
  - Persistent dizziness or collapse.
  - Pale and floppy (young children).
- Common food allergens in children include cow’s milk, egg, peanut, tree nut, wheat, soy, sesame, fish and shellfish⁴. While over 90% of food allergic reactions in Australia are caused by these foods⁵, any food may cause an allergic reaction.
- Children with peanut, tree nut, sesame, fish and shellfish allergy usually do not outgrow these allergies. However, cow’s milk, egg, soy and wheat allergy commonly resolve, with 85% of young children in population based studies outgrowing their allergy to cow’s milk or egg by age 3-5 years⁶.⁷
- In adults, the most common food triggers are those of peanut, tree nuts, sesame seed and seafood⁴.

NOTE: Mild or moderate allergic reactions may not always precede anaphylaxis⁸.
1.2.2 Non-IgE mediated food allergy:
• Reactions occur when the ingested food protein causes an immune response resulting in delayed inflammation, normally in the skin or gastrointestinal tract.
• Symptoms usually occur 2-24 hours after ingestion of the food protein.
• Diagnostic tests are usually negative.
• Symptoms include delayed eczema; delayed vomiting and diarrhoea; loose, frequent bowel actions; blood or mucus in stools; irritability and unsettledness in infants. Specific conditions include food protein-induced enterocolitis syndrome (FPIES), proctocolitis and food protein induced enteropathy.
• Refer to Appendix D for further details on syndromes and causative foods.

1.2.3 Mixed IgE and non-IgE mediated food allergy
• Symptoms are caused by one or both mechanisms described above.
• Conditions include eosinophilic oesophagitis and eczema.
• Refer to Appendix D for further information.

1.3 FOOD INTOLERANCE
Food allergy needs to be distinguished from other types of adverse food reactions such as food intolerance which can be:
• Metabolic in origin, due to an enzyme deficiency, such as lactose or fructose intolerance;
• Pharmacological reactions to food components, such as caffeine, monosodium glutamate (MSG) and other naturally occurring food chemicals (salicylates, amines);
• Toxic reactions, for example scombroid fish toxin; or
• Reactions where the mechanism is uncertain, such as reactions to sulfite preservatives.

While food allergy and food intolerance are commonly confused (since symptoms of food intolerance occasionally resemble those of food allergy), the following important points should be noted:
• Food intolerance does not involve the immune system and does not result from IgE mediated reactions, nor does it cause anaphylaxis.
• The exact mechanism by which some food intolerances occur is not always clear.
• There is no reliable skin or blood test to diagnose food intolerance.
• Diagnosis of food allergy and risk of anaphylaxis should always be medically confirmed.
• In some patients dietary elimination and challenge may assist diagnosis.

The primary focus of this document is the nutritional management of IgE mediated, non-IgE mediated and mixed IgE/non-IgE mediated food allergy.
2. Diagnosis of food allergy

IgE mediated food allergy is diagnosed through a detailed medical history in conjunction with skin testing or serum specific IgE testing performed by specialists qualified in interpreting the results. Refer to Appendix A for detail on diagnostic tests for allergy.

Diagnosis of non-IgE mediated food allergy requires dietary elimination +/- oral food allergen challenge. Exclusion diets to investigate suspected food allergy should only be undertaken with the support and supervision of a medical practitioner and dietitian.

Whilst it is not the dietitian’s role to diagnose food allergy, dietitians can assist clinical immunology/allergy specialists with identifying allergic triggers by:

- Obtaining detailed diet history.
- Providing dietetic support for oral food allergen challenges (e.g. blinded food challenges, disguising the allergen), used to confirm or determine if allergy has resolved.
- Supervise restricted diets and provide nutritional support to minimise the risk of nutritional compromise.

It is important for dietitians to refer patients to their GP for referral to a clinical immunology/allergy specialist if they suspect food allergy in a patient who has not yet been formally diagnosed.

Highly restricted diets may adversely affect nutritional status and interfere with diagnostic procedures such as coeliac disease testing. Inappropriate diets in young children may precipitate feeding disorders, which are common amongst children with food allergies.

Some individuals with egg and cow’s milk allergy may be able to tolerate extensively heated egg (such as egg in cakes) or cow’s milk products (such as baked commercial biscuits containing cow’s milk powder) in their diet without having any allergic reaction. However, the decision to introduce such foods into the diet of a cow’s milk or egg allergic individual and should only be done so in consultation with a clinical immunology/allergy specialist.

Where extensively heat treated egg and cow's milk products are clinically tolerated and incorporated into the diet of children known to be allergic to egg and/or cow's milk, they should not be removed without consultation with a clinical immunology/allergy specialist.

There are currently a few studies which suggest that regular ingestion of these extensively heated products might assist with outgrowing the egg or cow’s milk allergy. However, the evidence is not yet conclusive, and this should not be the major reason to introduce these products into the diet of children with known egg and cow's milk allergy at this time.

At times, oral food allergen challenges are undertaken to prove or disprove the presence of food allergy. Possible indications include to determine:

- The significance of a positive food allergy test when a clinical reaction has never occurred;
- Whether food allergy has resolved; or
- The presence of a food allergy when allergy tests are negative but the individual reports clinical symptoms and suspects food is involved (non IgE mediated allergy).

The location of challenge will be based on risk assessment by a clinical allergy/immunology specialist, taking into account the risk of reactivity; potential severity; other factors such as comorbidity (e.g. asthma); and location of residence. For example, high risk challenges (where anaphylaxis may occur) are normally carried out in well-equipped hospital units able to deal with anaphylaxis.

Standardised protocols for conducting oral food allergen challenges have been developed by ASCIA.

Refer to Appendix A for further information on the diagnosis and emergency treatment of food allergic reactions.
3. Nutrition assessment of food allergic individuals

3.1 INITIAL DIETARY ASSESSMENT – ADULTS AND CHILDREN
Important patient information to be collected:
• Circumstances of possible food allergic reaction including symptoms and suspected triggers.
• Does this patient have adequate medical involvement?
• Assess nutritional status including growth in children\textsuperscript{15}.
• Detect unnecessary dietary exclusions in adults and in the child and their mother if she is breastfeeding.
• Abnormal or unusual eating habits.
• Detailed list of foods consumed without problems, foods suspected of causing symptoms and foods that have been avoided (e.g. out of parental fear of a reaction).
• Assess levels of anxiety and possible need for referral to psychological services.
• Assess impact on family’s quality of life.

3.2 INITIAL DIETARY ASSESSMENT – INFANTS AND CHILDREN
Additional information to be collected for infants and children:
1. Plot weight and length/height and assess growth using appropriate growth charts.
2. Actual daily nutritional intake including breast and formula feeds and night feeds (24 hour recall or food records).
3. Feeding history, including:
   • Maternal dietary exclusion in breastfed infants:
     i. Did the symptoms improve with elimination?
     ii. Has the food/s been reintroduced via maternal diet and what was the result?
     iii. Are foods being excluded unnecessarily in the mother or the child?
   • Feeding behaviour (e.g. fussy at breast/bottle or good feeder).
   • History of formula changes and whether clinical changes resulted.
4. Complementary foods:
   • Timing of weaning and solid food introduction and any reactions to foods.
5. Feeding development:
   • Progression with textures of foods.
   • Self-feeding skills.
   • Mealtime behaviour (e.g. duration, sitting arrangements, self-feeding).
   • Food refusal of whole food groups and/or refusal of food for long periods of time without re-acceptance of the food.

Refer to Appendix B for further information.

3.3. ASSESSING GROWTH
• Indicates adequacy of macronutrients in diet.
• Children with food allergy may have impaired growth compared to non-allergic children\textsuperscript{16}.
• Failure to thrive can be a result of undiagnosed food allergy (especially non IgE mediated food allergy)\textsuperscript{16,17}. All cases of suspected failure to thrive should be assessed by a paediatrician.
• Cow’s milk, wheat or multiple food allergies have the greatest impact on nutrition and growth\textsuperscript{10,17}, therefore it is important to monitor growth and nutritional intake of children with these allergies until 2-3 years of age.
• Children with food allergies have better nutritional intake with dietary support\textsuperscript{16}.
### 3.4 IDENTIFYING NUTRIENTS AT RISK WITH EXCLUSION DIETS

<table>
<thead>
<tr>
<th>Food</th>
<th>Nutrients at risk with exclusion</th>
<th>Substitute food</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cow’s milk</td>
<td>Calcium, Protein, fat, Vit A, Vit D, Vit B12, riboflavin,</td>
<td>Calcium: soy or specialised formula; fortified soy, rice, nut or oat beverage</td>
</tr>
<tr>
<td></td>
<td>pantothenic acid, phosphorus</td>
<td>Protein, fat, Vit D: meat, poultry, legumes, nuts, wholegrains, soy beverage,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>specialised formula</td>
</tr>
<tr>
<td>Soy</td>
<td>Thiamine, phosphorus, riboflavin, magnesium, Vit B6, iron,</td>
<td>Meat, wholegrains, legumes</td>
</tr>
<tr>
<td></td>
<td>folate, calcium</td>
<td></td>
</tr>
<tr>
<td>Egg</td>
<td>Vit B12, pantothenic acid, riboflavin, selenium, folate,</td>
<td>Meat, poultry, legumes, wholegrains</td>
</tr>
<tr>
<td></td>
<td>biotin, Protein, fat</td>
<td></td>
</tr>
<tr>
<td>Wheat</td>
<td>Thiamine, riboflavin, niacin, iron, selenium, folate, biotin</td>
<td>Oats, rice, quinoa, aramanth, rye, buckwheat, barley, corn, millet</td>
</tr>
<tr>
<td></td>
<td>Protein, fat</td>
<td></td>
</tr>
<tr>
<td>Nuts</td>
<td>Niacin, Vit E, magnesium, manganese, chromium</td>
<td>Meat, wholegrains, legumes, vegetable oils</td>
</tr>
<tr>
<td>Fish, shellfish</td>
<td>Niacin, Vit B6, Vit B12, Vit E, phosphorus, selenium, iodine</td>
<td>Meat, poultry, grains, legumes, vegetable oils</td>
</tr>
<tr>
<td>Meat (beef,</td>
<td>Iron, zinc, Vit B12, protein</td>
<td>Fish, shellfish, wholegrains, legumes, seeds, nuts</td>
</tr>
<tr>
<td>chicken)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Ref: Pediatric Annals 37:8 August 2008.*
4. Comprehensive management of food allergy

4.1 ROLE OF DIETITIAN
Dietitians have an important role in the management of food allergy that includes:
- Monitoring of growth in children, nutritional adequacy in all patients.
- Educating patients/parents/guardians on how to avoid allergens and manage food allergy, especially if accidental exposure occurs.
- Support patients/parents.

It is important for dietitians to liaise with the clinical immunology/allergy specialist regarding allergy progression and/or resolution.

4.2 BREASTFEEDING AND INFANT FORMULAS

Breastfeeding and food allergy
- Breast milk is the first choice for all infants including those with food allergy.
- Maternal dietary proteins are transferable into breast milk and can sometimes provoke non-dangerous allergic reactions in a breastfed infant.

Possible indicators of IgE mediated food allergy in a breastfed infant include:
- Frequent and severe vomiting;
- Severe and unresponsive eczema;
- Generalised cutaneous symptoms (e.g. urticaria, eczema)\(^\text{18}\).

Possible indicators of non-IgE mediated food allergy in a breastfed infant include:
- Ongoing diarrhoea (with or without blood loss, with or without mucus present);
- Failure to thrive;
- Extreme irritability and feeding difficulties\(^\text{5}\).

Maternal dietary exclusion during breastfeeding
Maternal dietary exclusion is not usually recommended to prevent anaphylaxis in infancy; such reactions almost always require the child to ingest the food orally.

Short term maternal dietary exclusion is sometimes recommended on a trial basis for IgE or non-IgE mediated conditions (as directed by the clinical immunology/allergy specialist) to determine whether symptoms of eczema, irritability or gastrointestinal upset improve.

It is important to:
- Ensure adequate nutrition of mothers during dietary exclusion (e.g. nutritional advice, nutrient supplements).
- Assess whether the dietary exclusion is effective in improving the infant’s symptoms. If no improvement the mother should return to a normal diet.
- If resolution of symptoms in the infant occurs with maternal dietary exclusion, the suspected food protein should be reintroduced into the mother’s diet to confirm the allergy\(^\text{18}\). It is important to liaise with the immunologist/allergist/medical practitioner before conducting this type of challenge.

When is specialised infant formula recommended for food allergy?
- For infants with confirmed cow’s milk allergy and soy allergy when breastfeeding is not possible or supplementary feeding is required.
- When allergic symptoms in the breastfed infant persist after trialing maternal dietary exclusion of cow’s milk protein (dairy) and soy protein (mothers may express to maintain milk supply whilst specialised formula is trialed).

Feeding options for infants with confirmed cow’s milk allergy
Extensively hydrolysed formulas (eHF) and amino acid formulas (AAF) have modified proteins to reduce allergenicity. The proteins in these formulas have been broken down to amino acids level:
- eHF contains 85% amino acids and some cow’s milk protein. It is tolerated by 90% of infants with cow’s milk allergy.
- AAF contains 100% amino acids.
The following table outlines the formula options for infants with **confirmed** cow’s milk allergy (CMA)\(^9\):

<table>
<thead>
<tr>
<th>Feeding option</th>
<th>Uses</th>
<th>Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast milk</td>
<td>All infants</td>
<td></td>
</tr>
<tr>
<td>Soy formula</td>
<td>Confirmed CMA (not anaphylaxis) &gt; 6 m.o. (not soy allergic)</td>
<td>Without prescription</td>
</tr>
<tr>
<td>Extensively hydrolysed formula (eHF)</td>
<td>Confirmed CMA (not anaphylaxis) &lt; 6 m.o.</td>
<td>Without prescription or with PBS or Pharmac prescription</td>
</tr>
<tr>
<td></td>
<td>Confirmed CMA (not anaphylaxis) &gt; 6 m.o. if soy formula not tolerated</td>
<td></td>
</tr>
<tr>
<td>Amino acid formula (AAF)</td>
<td>Confirmed CMA (anaphylaxis)</td>
<td>Without prescription or with PBS or Pharmac prescription</td>
</tr>
<tr>
<td></td>
<td>SMA where soy and eHF not tolerated</td>
<td></td>
</tr>
</tbody>
</table>

**Introducing eHF or AAF**
- eHF and AAF formulas are not very palatable.
- These formulas can be more difficult to introduce in older infants.
- It is important to monitor the infant closely until they are taking adequate amounts.
- To improve palatability and acceptance of the formula:
  - Mix formula with expressed breast milk, increasing concentration of formula over a few days until the child is taking the formula on its own.
  - Add 1% golden syrup or 2 drops vanilla essence if refusing specialised formula (gradually reduce amount of flavouring agent 2-3 days after formula acceptance).
  - For older infants and children:
    - Chill the formula.
    - Serve in a covered cup.
    - Use a straw.
    - Incorporate into foods.

- Medical practitioners may prescribe eHF or AAF whilst the infant is still being breastfed if the infant satisfies the PBAC criteria.
- This can assist with acceptance of the formula should the mother stop breastfeeding or the infant require complementary feeding\(^15\).

**Milk options NOT recommended for infants with confirmed cow’s milk allergy**

Most individuals (over 90%) with cow’s milk allergy will react to other mammalian milks\(^20\).

Infant formulas that are NOT recommended in cow’s milk allergic infants:
- Cow’s milk based including anti-reflux and lactose free cow’s milk based;
- Partially hydrolysed (pHF) cow’s milk based (labelled as hypoallergenic or HA);
- Goat’s milk based formula\(^18\);
- Soy infant formula if the child is less than 6 months of age.

Soy formula is not currently recommended in children less than the age of 6 months by ASCIA which differs from the 2013 PBAC recommendations which make no age distinction. ASCIA will review recommendations after the release of the next Cochrane Review regarding infant formulas.

Other preparations that are NOT recommended due to allergenicity or suboptimal nutritional profile:
- A2 cow’s milk;
- Rice drink;
- Oat drink;
- Soy drink;
- Almond or other nut drinks;
- Other mammalian milks;
- Home-made cereal/soy/nut drinks\(^18\).
Milk options after 1 year of age for cow’s milk allergy

Dietary review by an Accredited Practicing Dietitian is recommended at this stage to consider the most appropriate option to ensure nutritional adequacy of the overall diet.

**Continue breastfeeding**
- Breastfeeding can be continued into the second year of life.
- Alternative milk beverages such as soy, oat, rice or nut drinks can be introduced in cooking and as a drink whilst breastfeeding.

**Specialised infant formula (eHF or AAF)**
- For those children with allergies to both cow’s milk and soy, it is preferable to continue with specialised formula until age 2 as the nutrient profile is better for growth than cereal or nut based drinks.
- Consider whether the calcium content of the specialised formula is adequate for the second year of life.
- Amino acid formula is available in preparations for over one year of age. Diet history and assessment at one year of age will determine whether a change to >1 year preparation is necessary.

**Soy drink**
- Children on soy infant formula can be changed to a calcium fortified soy drink after 12 months of age.
  - Calcium fortified (120mg/100mL).
  - 2-3.5% fat content, protein content around 3g/100ml.
  - Some soy drinks may contain other allergens (e.g. chickpea, wheat).

**Oat, rice and nut drinks**
- These drinks are low in fat and protein and should only be used in young children with dietetic supervision.
  - Use calcium fortified versions when available (120mg Ca/100mL).
  - Some rice and oat drinks may contain other allergens (e.g. chickpea).

Ensuring adequate calcium intake

Calcium supplements are more effective when taken:
- In split doses (calcium is best absorbed in doses less than 500mg).
- Separately from iron or iron rich meals.

Considerations when choosing a calcium supplement

The amount of **elemental** calcium (calcium available for absorption) is important:

**Calcium Carbonate**:
- Inexpensive and contains the most elemental calcium per tablet.
- Needs gastric acid for absorption so best taken with meals.
- Not absorbed well by patients taking proton pump inhibitors or H2 blockers for gastric reflux.

**Calcium Citrate**:
- Best absorbed supplemental form of calcium but contains less elemental calcium.
- Can be taken any time of day.

**Calcium Gluconate and Calcium Lactate**:
- These types of calcium pills contain low content of elemental calcium.
- May need to take a large amount of tablets to meet the calcium requirement.

A range of calcium supplements are available for children. Calcium supplements given to children should be based on doses appropriate for their age.

**Calcium supplement doses**
- Calcium should be supplemented to bridge the deficit in calcium intake, where the intake of calcium fortified milk substitute is low.
- Referral to a dietitian is recommended to calculate the level of calcium supplementation required.
• The following table indicates the Recommended Dietary Intake of calcium for various ages, supplementation above the RDI is not recommended unless specifically prescribed by a medical practitioner.
• Refer to ASCIA patient education resource for CMA for further information on food sources of calcium.

<table>
<thead>
<tr>
<th>Age</th>
<th>Calcium RDI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3 yrs</td>
<td>500 mg</td>
</tr>
<tr>
<td>4-8 yrs</td>
<td>700 mg</td>
</tr>
<tr>
<td>9-11 yr</td>
<td>1000 mg</td>
</tr>
<tr>
<td>12-18 yrs</td>
<td>1300 mg</td>
</tr>
<tr>
<td>Men 19-70 yr</td>
<td>1000 mg</td>
</tr>
<tr>
<td>Men &gt; 70</td>
<td>1300 mg</td>
</tr>
<tr>
<td>Women 19-50</td>
<td>1000 mg</td>
</tr>
<tr>
<td>Women &gt; 50</td>
<td>1300 mg</td>
</tr>
</tbody>
</table>

The Upper Limit for all ages is 2500mg.

Ref: NHMRC Nutrient Reference Values.

4.3 COMPLEMENTARY FOODS (INTRODUCING SOLIDS)

ASCIA Infant Feeding Advice
• ASCIA Infant Feeding Advice has been developed for infants with a family history of allergic disease.
• The same principles apply for infants without a known family history of allergic disease and for infants with confirmed food allergy.
• ASCIA Infant Feeding Advice is available from the ASCIA website: www.allergy.org.au

Breastfeeding
• Breastfeed for at least 6 months;
• Exclusion of potentially allergenic foods from the maternal diet is not recommended during breastfeeding for the prevention of allergy;
• Continue to breastfeed whilst introducing complementary foods22.

If supplementary infant formula is required:
• No family history of allergic disease - regular cow’s milk formula can be used;
• Family history of allergic disease - partially hydrolysed formula (labelled as HA formula) may be used22.

Complementary foods for infants with confirmed food allergy and those with a family history of allergic disease
• It is advised to introduce solids to infants from 4-6 months of age (not < 4 months) whilst maintaining breastfeeding. ASCIA's recommendation regarding the timing of the introduction of solids relates to the current evidence for allergy prevention and may differ to other general guidelines relating to the introduction of solids;
• Introduce foods when the infant is developmentally ready, somewhere between 4 and 6 months;
• There is no particular order for introducing complementary foods and one new food can be introduced every 2-3 days to allow for observation of possible adverse reactions;
• If tolerated continue to include introduced foods to ensure a varied diet;
• There is insufficient evidence to delay the introduction of potentially allergenic foods, however, if the infant has confirmed food allergies, these foods need to be avoided;
• Breast milk or an appropriate infant formula should remain the main source of milk until 12 months of age (cow’s milk can be used in cooking from 4-6 months unless the infant has confirmed cow’s milk allergy);
• Infants showing signs of allergic disease need to be assessed by a medical practitioner22.
If an adverse food reaction occurs:
• The suspected food should be avoided until the infant is reviewed by their medical practitioner.
• Continue to introduce other new foods.
• Referral to a clinical immunology/allergy specialist may be necessary.

Note: Minor redness around the mouth from citrus, berries and tomatoes is common. This is normally due to contact irritation and rarely indicates allergy. A skin emollient may be applied before eating these foods to lessen irritation.

4.4 EDUCATION

Food selection and preparation
It is important to teach parents/guardians/patients about appropriate meal selection and preparation. Dietitians have an important role in educating patients/parents/guardians about:
• Allergen avoidance;
• Appropriate food/ingredient substitutes;
• How to achieve a balanced diet;
• Encouraging normal eating behaviour\textsuperscript{15,23}.

Education should be in context with other issues for parents/guardians:
• Stress;
• Perception of risk of anaphylaxis and poor outcome: is it realistic;
• Busy life, juggling responsibilities;
• Parents with limited knowledge of cooking without pre-prepared products;
• Cultural and language issues;
• Fatigue from sleep deprivation from feeding/caring for an often unsettled infant;
• Post Natal Depression;
• Other siblings\textsuperscript{15,23}.

For children and young adults with food allergy, age appropriate education is essential for allergen avoidance. Children and young adults need to know:
• How to identify known allergens (e.g. show photos of food allergens).
• How to declare their food allergy – “tell and ask”.
• To be assertive and question food offered by others.
• To not share or swap food and utensils (unless washed).
• Risk minimisation strategies (e.g. hand washing before and after eating to prevent cross contamination).
• How to read and understand product labels (including alternate words for food allergen).
• If they are not sure if the food is safe they should not eat it.
• If they have been prescribed an adrenaline autoinjector and they do not have it easily accessible, they should not eat.

Adolescents and young adults have the highest rate of food-induced fatal anaphylaxis, most commonly when eating outside the home\textsuperscript{24-27}. The reasons are unclear but poor education and risk-taking behaviour may contribute.

Educate about potential sources of cross contamination of food allergens:
• Processing - cross contamination of allergens can occur on shared manufacturing lines, in the process of transporting, storing or packaging of ingredients.
• Point of purchase such as food sold in bulk containers and distributed using shared trowels, delicatessen items.
• Food preparation such as using shared equipment such as knives, slicing equipment and cutting boards or shared frying pans without washing in between use.
• Food service such as food buffet, juice bars.
Food labels and food allergy

Patients/parents need education about selection of appropriate foods. Supermarket shelves can often be overwhelming for the newly diagnosed individual or parent of an allergic child when shopping for appropriate foods, therefore it is important to teach patients how to read food labels.

Food allergic patients need to know:
- What information is mandatory on food labels.
- What information is voluntary on food labels.
- How to identify allergens on the label.
- When to use caution and seek further information.

Food allergic patients should always check:
- Labels every time they purchase a product (even if previously considered safe) as ingredients and/or manufacturing processes may change.
- Ingredient lists and precautionary allergen statements.

Food allergic individuals may need to contact manufacturers for additional information regarding the risk of cross contamination from food allergens.

Imported foods may pose a higher risk for the allergic individual, as the standards of food labelling may not comply with Australian and New Zealand standards. Nonetheless, unlabelled foods pose a much higher risk of accidental exposure.

Refer to Appendix C for further information relating to the FSANZ Food Standards Code and food allergens on food labels.

Refer to the ASCIA dietary avoidance information sheets for patient information:
Appendix A: Diagnosis and emergency treatment of food allergy

ALLERGY TESTING
Allergy tests are not stand-alone diagnostic tools.
Diagnosis of allergy is based on a combination of:

• Clinical history.
• Tests to identify IgE sensitisation to an allergen. These should be undertaken and interpreted by a clinical immunology/allergy specialist:
  – Skin Prick Testing (SPT). This detects the presence of allergen-reactive IgE bound to skin mast cells. A positive SPT is defined as a wheal size greater than 3mm compared to the negative control. SPT results must be performed by trained medical professionals and interpreted by a clinical immunology/allergy specialist.
  – Serum allergen specific IgE (ssIgE) - a blood test formerly known as RAST. This measures allergen-reactive IgE in the blood.
• Medically supervised oral food allergen challenge (as required).

Patch testing is not used to confirm IgE mediated food allergy.

It is important to note that many people with positive allergy tests do not have clinical allergy and suspected allergy should always be confirmed by a clinical immunology/allergy specialist.

Allergy testing can tell us:
• If the patient is sensitised to an allergen.
• The likelihood of reacting after a food challenge (for certain foods).
• If a patient is not sensitised to an allergen and therefore, that an IgE mediated reaction is unlikely.

Allergy testing cannot tell us:
• The severity of a reaction if a sensitised patient is exposed to the allergen.
• If the patient’s symptoms are caused by the allergen.

Misconceptions about allergy testing
• A positive test result is diagnostic of a food allergy.
• A negative test result excludes food allergy.
• The SPT wheal size correlates with the severity and/or duration of an allergy.

Unproven and inappropriate methods that claim to test for allergy or intolerances:
• Include IgG testing to foods, cytotoxic food testing, kinesiology, Vega testing, electrodermal testing, pulse testing, reflexology and hair analysis.
• Are not scientifically validated and may lead to unnecessary, costly and (in the case of some changes in diet) dangerous avoidance strategies.
• Are not Medicare rebated in Australia.
• Are not recommended by ASCIA or any allergy society worldwide.

Further information is available from the ASCIA website: www.allergy.org.au/health-professionals/hp-information/asthma-and-allergy/unorthodox-testing-and-treatment

Co-reactivity
Co-reactivity means clinically allergic to proteins in unrelated foods
For example, in individuals allergic to:
• Cow’s milk protein: 10% are also allergic to soy. This is particularly relevant when choosing an alternative infant formula.
• Egg: 30% also have peanut or tree nut allergy.

In certain patients allergy testing for co-reactive foods may provide useful information on co-existing allergy.
Cross-reactivity

Cross-reactivity means clinically allergic to similar proteins present in related foods.

For example, in individuals allergic to:

- Cow’s milk: ~90% will be allergic to goat’s milk;
- Cashew: most will be allergic to pistachio;
- Fish: ~75% will be allergic to other fish;
- Prawn: most will be allergic to other crustaceans (e.g. crab, lobster);
- Peanut: ~5% are allergic to another legume (e.g. soy);
- Oral allergy syndrome: allergic to similar proteins in pollen and some fruit/vegetables.20

Understanding potential cross-reactivity may assist in assessment and management.

TREATMENT OF FOOD ALLERGIC REACTIONS29

Action for mild or moderate allergic reactions

- Remove allergen if possible or obvious but it may be unknown that the food has been ingested.
- Non-sedating antihistamines may be useful for cutaneous symptoms (e.g. hives).
- Locate adrenaline autoinjector (if available).

Watch for signs of progression to anaphylaxis.

Action for anaphylaxis

- Lay patient flat. Do not allow them to stand or walk. If breathing is difficult, allow them to sit.
- Give ADRENALINE AUTOINJECTOR into the outer mid-thigh without delay:
  - 0.15 mg adrenaline autoinjectors should be given to children 10-20kg (aged ~1-5 years).
  - 0.30 mg adrenaline autoinjectors should be given to adults and children > 20kg (aged over ~5 years).
  - Repeat every 5 minutes as needed if unresponsive.
- Phone ambulance to transport patient to hospital if not already in a hospital setting.

If in doubt, give the adrenaline autoinjector.

All individuals at risk of anaphylaxis should:

- Know what to do in an emergency.
- Have an ASCIA Action Plan for anaphylaxis completed by their medical practitioner.
- Carry an adrenaline autoinjector and know how to use it.

If the patient is not confident in how to manage their allergy and/or risk of anaphylaxis, suggest a follow-up appointment with their medical practitioner.
Appendix B: Nutrition assessment – infants and children with food allergy

Medical history
- The patient’s reaction on exposure to the allergen should be noted (e.g. anaphylaxis, hives, eczema, contact reaction, vomiting, diarrhoea etc).
- Note whether the patient is under the care of a clinical immunology/allergy specialist, dermatologist, GP, paediatrician or other health professionals. If anaphylaxis is suspected, patients should be advised to see their usual medical practitioner as soon as possible.
- It is useful to ask if the child is still experiencing symptoms and if so, how often.
- Any other relevant information from patient history.

Diagnostic pathology
- The results of any allergy test (SPT, ssIgE) should be noted.

Medications
- Does the patient have an ASCIA Action Plan (for allergic reactions/for anaphylaxis)?
- Does the patient possibly require and have an adrenaline autoinjector (EpiPen or Anapen), is it in date and do they know how to use it?

Weight/height history
- Obtain a detailed weight/height history and plot on a growth chart.
- Infants and young children with multiple food allergies are at risk of failure to thrive.
- Failure to thrive is defined as a downward deviation in 2 or more weight percentiles from previously held percentiles, or a marked discrepancy of 2 or more centiles between weight and height. A drop across centile lines for length or height indicates stunting and longer term malnutrition.

Dietary assessment
- A feeding history is useful for young children.
- Asking about early feeding methods (breast, bottle), timing of introduction of solids and progression with texture may help identify feeding disorders which are not uncommon in patients with multiple food allergies.

The child’s usual diet may be assessed by any of the following methods:
- Diet history.
- 24 hour dietary recall.
- 3 day food diary.

This will assist in identifying which foods/food groups are being avoided and if replacement products are being used.
- Check for hidden sources of the allergens that should be avoided in the diet.
- Note if there are any other dietary restrictions.
- Cross check/specifically ask, regarding common allergens (e.g. cow’s milk, egg, wheat, nuts, soy etc).

When able to, make an accurate assessment of intake: For example:
For fully bottle fed infants, the child’s estimated energy, protein and fluid intake may be documented as Cal/kg/day, g/protein/kg/day or mL/kg/day respectively.

For other cases, intake may be documented as per the following example:
“From parent’s report (food diary etc), food and beverages consumed appear to be in line with normal quantities for this age group”
OR
“From parent’s report (food diary etc), food and beverages consumed appear to be less than usually consumed for this age group.”

Exclusion of foods and/or food groups is likely to contribute to nutrient deficiencies in the diet. Document the foods/food groups that are lacking and the nutrients likely to be at risk. For example:
“Sensitised to wheat and currently avoids all wheat based products. Is consuming appropriate wheat free products. Intake of thiamine could be at risk. Fibre intake is low.”

This information has been adapted from the Women’s and Children’s Hospital Clinical Nutrition Guideline: Food Allergy, Nutrition Department, March 2011.
Appendix C: Food labels and food allergy

FSANZ Food Standards Code
• Food Standards Code 1.2.3 includes mandatory labelling of common allergens included as an ingredient, part of compound ingredient, food additive or processing aid.
• Mandatory allergens include:
  − Peanut
  − Tree nuts
  − Cow’s milk
  − Egg
  − Fish
  − Shellfish
  − Sesame
  − Soy
  − Cow’s milk
  − Gluten (must state grain source)
  − Soy
• Despite this regulation, some labels may not comply and therefore it is still important to educate about the various names for the allergens.
• An ingredient can be listed under a variety of names and not all are obvious, so it is important to provide patients with detailed lists of ingredient names. Wallet cards for the common allergens are available from Allergy & Anaphylaxis Australia.
• For the variety of names used for each of the common allergens, visit the ASCIA website for the ASCIA Dietary Avoidance Information Sheets: www.allergy.org.au/patients/food-allergy/ascia-dietary-avoidance-for-food-allergy and the Allergy & Anaphylaxis Australia website: www.allergyfacts.org.au

Ingredients derived from common allergens
• Ingredients derived from common allergens may be refined by removing the protein content, making them non-allergenic.
• Examples include:
  − Glucose derived from wheat.
  − Lecithin derived from soy or egg.
Further examples can be found in the ASCIA Dietary Avoidance Information Sheets available from the ASCIA website: www.allergy.org.au/patients/food-allergy/ascia-dietary-avoidance-for-food-allergy

‘Free from’ labelled products
• Some products are manufactured specifically to replace an allergen (e.g. non-dairy substitute) or exclude an allergen (e.g. dairy free cake mix).
• These products can be very popular and useful.
• However, some products may require the addition of an allergenic ingredient in the preparation of the product.
  Example:
  e.g. Nut free, wheat free, egg free, dairy free cake mix – instructions may include ‘add egg’
• Therefore, it is important to teach consumers to read the ingredient list and cooking/preparation instructions, not just the ‘free from’ message.

Precautionary Allergen Statements (PAS)
• The intention of PAS is to convey risk of unintentional allergen inclusion due to cross contamination and possibly to protect the manufacturers. Examples include:
  − ‘May contain traces of nuts’.
  − ‘Allergy information: baked in a facility that uses dairy’.
  − ‘Manufactured in a facility that also processes peanuts’.
• PAS are voluntary, unregulated and included at the discretion of the food manufacturer.
• PAS therefore, may not always be present on a food label, even though there may be a risk of cross contamination.
• In Australia 95% of snack food products include PAS and there are 30 different types of PAS.
• VITAL is a voluntary program that provides a process and criteria to determine if precautionary labeling is required. For more information, visit www.allergenbureau.net/vital/
Appendix D: Non-IgE mediated and mixed IgE/non-IgE mediated conditions associated with food allergy

Conditions associated with food allergy:
- Oral allergy syndrome.
- Food allergy and eczema (atopic dermatitis).
- Gastrointestinal syndromes.

These conditions:
- Are mostly non-IgE or mixed IgE mediated.
- Often have negative SPT and serum specific IgE tests.
- Often require identification of causative foods by exclusion and re-challenge.
- Have symptoms that are delayed and often dose dependent.

**ORAL ALLERGY SYNDROME (OAS)**
- Occurs predominantly in pollen-sensitised individuals;
- Affects 10% of those with allergic rhinitis (significant regional variation);
- Mediated by cross-reactive IgE responses to allergens present in pollen and other plants;
- Presents with itchy mouth/throat with eating uncooked fresh fruits, vegetables, spices, sometimes nuts, latex;
- Progression to anaphylaxis is rare.

Dietary management
- Avoidance of the offending foods in their raw, uncooked form (except peanuts and tree nuts as roasted nuts can cause OAS);
- Most patients will tolerate the food if well cooked and those who can tolerate the foods cooked should not avoid them in their cooked form;
- Cooking, baking or briefly microwaving raw fruits and vegetables is usually sufficient to alter the allergen to make them tolerable;
- Implicated nuts usually cause symptoms regardless of cooking and therefore should be avoided;
- Those unable to consume many fruits/vegetables may require nutritional advice and supplements.

**FOOD ALLERGY AND ECZEMA**
- Food allergy commonly co-exists with atopic eczema in early childhood;
- Early onset (< 3 months of age) and severe disease make co-existent food allergy more likely;
- Food allergy may aggravate pre-existent eczema in some individuals, but is not the cause;
- Cow’s milk, egg, peanut, soy and wheat are the major triggers;
- Food is rarely an aggravant of eczema in adults;
- Patients should be referred to a clinical immunology/allergy specialist for possible identification of the offending food/s.
- *Routine removal* of dietary factors (such as wheat and dairy in those without a history of rapid onset of allergic symptoms soon after ingestion is only occasionally helpful.

Source: Adapted from Boyce et al. JACI, 2010.
Mechanisms and management

Most cases are IgE mediated:
• Acute flare of eczema after oral ingestion of the offending food/s\(^{36}\).
• More subtle symptoms with passive transfer via breast milk\(^{15}\).
• Positive allergy tests when testing for offending food/s\(^{36}\).
• Management – temporary elimination of offending food/s, followed by challenge with the offending food/s (usually via maternal diet if being breastfed)\(^{36,38}\).

Less commonly, cases can be non-IgE mediated\(^{39,40}\):
• Onset of symptoms is delayed (6-48 hours)\(^{33,39}\).
• Most common triggers are cow’s milk, wheat and soy\(^{41}\).
• Negative allergy tests when testing for offending food/s\(^{40}\).
• The role of atopy patch testing remains uncertain\(^{1}\).
• Management – temporary elimination of suspected offending food/s, followed by challenge with the suspected offending food/s (1-2 weeks)\(^{42}\).

Note for IgE, non-IgE and food chemical intolerance cases:
• Severe dietary restrictions are not usually required in breastfeeding mothers.
• Elimination and challenge should be carried out under medical supervision.

**OVERVIEW OF GASTROINTESTINAL SYNDROMES ASSOCIATED WITH FOOD ALLERGY**

<table>
<thead>
<tr>
<th>Syndrome</th>
<th>Age</th>
<th>Symptoms</th>
<th>Causal foods</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Food protein-induced enteropathy</strong></td>
<td>Early infancy</td>
<td>Protracted diarrhoea, vomiting, abdominal distension, failure to thrive, oedema</td>
<td>Usually cow’s milk, soy or wheat</td>
<td>Dietary manipulation with hypoallergenic infant formula</td>
</tr>
<tr>
<td><strong>Food protein-induced proctocolitis</strong></td>
<td>First weeks – months of life</td>
<td>Isolated bloody stools, otherwise well and thriving</td>
<td>Cow’s milk, soy drink, breastfed (50%)</td>
<td>Dietary manipulation with hypoallergenic infant formula</td>
</tr>
<tr>
<td><strong>Food protein-induced enterocolitis (FPIES)</strong></td>
<td>Young infants</td>
<td>Protracted diarrhoea, projectile vomiting, hypovolaemic shock</td>
<td>Cow’s milk, soy drink, rice, beef, poultry, grains (does not occur in exclusively breastfed infants)</td>
<td>Dietary manipulation with hypoallergenic infant formula</td>
</tr>
<tr>
<td><strong>Eosinophilic oesophagitis</strong></td>
<td>Any age (early infancy more diet responsive)</td>
<td>Gastroesophageal reflux, postprandial nausea, vomiting, food impaction, diarrhoea, abdominal pain</td>
<td>Most commonly cow’s milk, soy, wheat, egg and sometimes meat and grains</td>
<td>Dietary manipulation (usually 8 foods), swallowed or inhaled corticosteroids</td>
</tr>
</tbody>
</table>


**EOSINOPHILIC OESOPHAGITIS (EoE)**
• EoE is a mixed IgE and non-IgE mediated condition;
• EoE involves inflammation with eosinophils (“allergy white cells”) in the oesophagus;
• Most patients are atopic (~60%);
• 10% of patients have a family history of EoE;
• Delayed diagnosis is common;
• Male adults and children more commonly have EoE than females;
• Resolution is rare;
• Diagnosis – gastroenterology review, endoscopy and biopsy confirmation;
• Symptoms of eosophageal dysfunction - there is age variation in symptoms;
• Management options – dilation of strictures; medication (anti-reflux medications, swallowed asthma steroids); dietary manipulation\(^{5,32,43}\).
Rationale for dietary manipulation

• Amino acid diets result in resolution in around 95% of children, but are difficult to use in older children and adults;
• Studies eliminating foods based on the results of skin prick testing and food patch testing report 70% success rates;
• However, there is a lack of consensus on the type of dietary manipulation that should be used in the treatment of EoE;
• The types of dietary manipulation include:
  ‒ 8 food elimination diet.
  ‒ Directed diets.
  ‒ Amino acid based diets.
• If undertaking dietary manipulation, this should be supervised by a specialised dietitian working closely with the allergy specialist or gastroenterologist to ensure provision of an adequate and appropriate diet;
• The medical specialist is responsible for the decision on which dietary manipulation is to be followed, the dietitian provides support for the patient and family to achieve nutritional adequacy;
• Dietary manipulation will assist both adults and children;
• Allergy testing does not reliably predict implicated foods or who will improve;
• Mechanism – IgE mediated and delayed inflammation;
• Most common triggers – milk, soy, egg, wheat, nuts, seafood; chicken and red meat are less common triggers\(^{43,44}\).

Eight (8) food elimination diet

• Usually only milk, soy, egg, wheat, peanuts, tree nuts, fish and shellfish are removed;
• Sometimes referred to as 6 food elimination diet if fish and shellfish are grouped together and peanuts and tree nuts are grouped together;
• Additional foods may be eliminated if allergy testing positive or history indicates;
• Main advantage is simplicity resulting in increased compliance;
• Dietitians assist by providing advice on food substitutes and nutritional supplementation if required;
• Repeat endoscopy/biopsy conducted after 6-8 weeks to assess the benefit of the dietary manipulation.
• If improvement seen (symptoms, repeat biopsy), allow diet liberalisation, introducing one new food every 5-7 days;
• Withdraw the food if symptoms return;
• The gastroenterologist will determine the frequency of repeat biopsies;
• If no improvement with dietary manipulation, diet is less likely to be an underlying cause\(^{5,44}\).

Directed diets

• Directed diets remove foods based on the history of trigger foods and allergy testing;
• Food/s are removed from the diet for 6-8 weeks;
• Dietitians assist by providing advice on food substitutes and nutritional supplementation if required;
• Repeat endoscopy/biopsy conducted after 6-8 weeks to assess the benefit of the dietary manipulation;
• If improvement seen (symptoms, repeat biopsy) allow diet liberalisation introducing one new food every 5-7 days;
• Withdraw the food if symptoms return;
• The gastroenterologist will determine the frequency of repeat biopsies;
• If no improvement, diet is not an underlying cause\(^{44}\).

Amino acid based diet

• The amino acid based diet is impractical in adults and most older children;
• It is based on formula containing free amino acids, corn syrup solids, medium-chain triglycerides for 6-8 weeks (eHF is not appropriate);
• Patients are also allowed water, one fruit and fruit juice;
• Tube feeding may be required in older patients;
• If improvement seen (symptoms, repeat biopsy) allow diet liberalisation introducing one new food every 5-7 days;
• Withdraw the food if symptoms return;
• The gastroenterologist will determine the frequency of repeat biopsies;
• If there is no improvement, diet is not an underlying cause\(^{43,44}\).
FOOD PROTEIN-INDUCED ENTEROPATHY

Overview
• Age: < 3 years;
• Symptoms: vomiting, diarrhoea, failure to thrive, poor nutrition;
• Onset: 1-3 days after exposure;
• Major triggers: milk, soy, wheat, egg;
• Exposure route: via breast milk or infant diet (e.g. formula).5,38

Management
• If breastfeeding - continue breastfeeding with maternal dietary elimination of major triggers;
• If formula fed - eHF usually tolerated and eliminate food from the infant’s diet;
  – Use AAF if no improvement seen.
• Improvement usually seen within 3-7 days (occasionally 2 weeks);
• If child improves, challenge by introducing one food per week;
• Modified diet thereafter;
• Breastfeeding mothers may need nutritional support;
• Reassess and possibly re-challenge every 12 months (usually home challenge)5,45.

FOOD PROTEIN-INDUCED ENTEROCOLITIS SYNDROME (FPIES)

Overview
• Age: Most commonly present at 4-6 months during introduction of foods/formula; most resolve by 3-4 years of age.
• Symptoms: Profuse vomiting, some children develop lethargy, pallor, diarrhoea, hypothermia and/or hypovolaemia;
• Onset: Usually within 2-4 hours after exposure; diarrhoea may take 4-8 hours;
• Major triggers: Rice, cow’s milk and soy are the most common causes; also eggs and oats; any food can trigger FPIES;
• Approximately 60% react to first exposure to food;
• Post reaction, up to 50-70% of children have an elevated neutrophil and/or platelet count;
• Very rarely occurs in exclusively breastfed infants;
• Severe cases require hospital challenge to prove resolution.5,45.

Management
• If breastfeeding, continue and eliminate offending food/s from infant diet; do not need to eliminate offending foods from the maternal diet (unless evidence of acute FPIES following a breastfeed; this is very rare);
• If cow’s milk/soy induced FPIES, eHF usually tolerated;
  – If FPIES reaction to eHF occurs, then use AAF
  – Approximately 20-50% of children with cow’s milk FPIES may cross react and have soy FPIES5,45.

Introduction of solids
• Most children with FPIES in Australia have FPIES to single triggering food.
• If FPIES occurring to more than one food, then referral to a paediatric clinical immunology/allergy specialist is recommended to guide safe introduction of foods.
• Most fruits and vegetables are safe in children with FPIES. More common causes of fruit FPIES include banana, avocado. Vegetable FPIES occurs commonly to sweet potato. These do not necessarily need to be avoided, particularly in children with single food FPIES.
<table>
<thead>
<tr>
<th>Triggering food</th>
<th>Other foods to avoid</th>
<th>Alternative foods considered to be safe to introduce at home</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice</td>
<td>+/- Oats (risk cross-reactivity &lt; 20%)</td>
<td>Wheat, rye, barley, corn, quinoa, millet, buckwheat</td>
</tr>
<tr>
<td>Soy</td>
<td>+/- legumes&lt;br&gt;+/- cow’s milk</td>
<td></td>
</tr>
<tr>
<td>Cow’s milk</td>
<td>+/- soy</td>
<td></td>
</tr>
<tr>
<td>Egg</td>
<td>Whole egg and baked egg</td>
<td></td>
</tr>
<tr>
<td>Chicken</td>
<td>All poultry</td>
<td>Beef, lamb, pork</td>
</tr>
<tr>
<td>Fish</td>
<td>All fish</td>
<td>Currently no data available to determine if tinned fish or shellfish is safe</td>
</tr>
<tr>
<td>Fruits and vegetables</td>
<td></td>
<td>Introduce other fruits and vegetables at home</td>
</tr>
</tbody>
</table>

- Feeding difficulties are common in children with FPIES, particularly with delayed diagnosis\(^4^6\).
- Uncommon cases of adult-onset FPIES are most commonly triggered by seafood.

**FOOD PROTEIN-INDUCED PROCTOCOLITIS**

**Overview**
- Age: < 3 months;
- Symptoms: bloody stools, usually otherwise well;
- Onset: usually breastfed infants; sometimes on formula;
- Major triggers: milk, soy\(^5,4^5\).

**Management**
- If breastfeeding, continue but remove dairy/soy from maternal diet\(^5,4^5\):
  - More extensive maternal diet manipulation only with specialist advice.
  - If so, eliminate major triggers from maternal diet, then challenge via maternal diet once stable.
  - Mother may need dietary support.
- If formula fed, eHF usually tolerated; eliminate food from infant diet\(^5,4^5\):
  - Improvement usually seen 3-7 days (occasionally 2 weeks).
  - Use AAF if no improvement seen.
- Most resolve by 9 months of age\(^5,4^5\).
- Re-challenge with offending food at home after it has been eliminated for 6 months.

**Formula options for gastrointestinal syndromes associated with food allergy**

When cow’s milk and soy are triggers:

<table>
<thead>
<tr>
<th>Breastfeeding and maternal dietary exclusion</th>
<th>Formula options</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Food protein-induced enteropathy</strong></td>
<td></td>
</tr>
<tr>
<td>• Continue breastfeeding if possible</td>
<td>• eHF</td>
</tr>
<tr>
<td>• Maternal dietary exclusion of suspect food/s</td>
<td>• Use AAF if eHF not tolerated</td>
</tr>
<tr>
<td><strong>Food protein-induced proctocolitis</strong></td>
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<tr>
<td><strong>FPIES</strong></td>
<td></td>
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<td>• Continue breastfeeding if possible</td>
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</tr>
<tr>
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</tr>
<tr>
<td><strong>EoE</strong></td>
<td></td>
</tr>
<tr>
<td>• Continue breastfeeding if possible</td>
<td>• AAF</td>
</tr>
<tr>
<td>• Maternal dietary exclusion not recommended without specialist advice</td>
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</tr>
</tbody>
</table>

Appendix E: Sources of information about food allergy for dietitians and patients

Australasian Society of Clinical Immunology and Allergy (ASCIA)
ASCIA is the peak professional body of clinical immunology and allergy specialists in Australia and New Zealand.
www.allergy.org.au

ASCIA e-training for health professionals
• Food allergy, anaphylaxis, allergic rhinitis and immunotherapy

ASCIA health professionals webpage
www.allergy.org.au/health-professionals
• Includes links to ASCIA health professional information papers, position papers and guidelines.

ASCIA anaphylaxis resources webpage
www.allergy.org.au/health-professionals/anaphylaxis-resources includes links to:
• ASCIA Action Plans, Travel Plans, FAQ, Guidelines, Information for parents and other anaphylaxis related resources.
• ASCIA anaphylaxis e-training for schools and childcare.
• ASCIA e-training for the community.

ASCIA patients and consumer webpage
www.allergy.org.au/patients/ascia-education-resources
• Includes links to more than 60 topics in the ASCIA Education Resources patient information series, including ASCIA infant feeding advice. Most of these documents include allergen minimisation and avoidance strategies.
• ASCIA dietary avoidance information sheets

Food labelling
• Food Standards Australia & NZ
www.foodstandards.gov.au

• VITAL labelling information
www.allergenbureau.net

Patient support organisations
• Allergy & Anaphylaxis Australia
www.allergyfacts.org.au
Provides patient resources and phone assistance throughout Australia.

• Allergy New Zealand
www.allergy.org.nz
Provides patient resources and phone assistance throughout New Zealand.

Adrenaline autoinjector supplier websites
• EpiClub
www.epiclub.com.au
Provides EpiPen expiry date reminder for patients.

• Analert
www.analert.com
Provides Anapen expiry date reminder for patients.
Appendix F: References