The Role of the Healthcare Professional in Paediatric Food Allergies and Intolerances

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Infancy and young childhood are periods of significant growth and development. Good nutrition, in the form of adequate energy and sufficient nutrients (protein, carbohydrate, fat, vitamins and minerals), is key in supporting health and development during this time. However, managing the nutritional intake of children with food allergies and intolerances presents a challenge for parents, carers and healthcare professionals alike. Food allergies affect 3-6% of children in the developed world[1] and are becoming more common. Beyond the immediate risk of anaphylaxis, poorly managed allergies and intolerances put infants and young children at greater risk of developing nutritional disorders and faltering growth.[2]

Food allergy *vs.* food intolerance

Food allergies and intolerances are often confused but are distinctly different (see **Table 1**). The primary difference between a food allergy and a food intolerance is the involvement of the body's immune system in an allergic response, meaning a food allergy has the potential to be life-threatening. Food allergies can be further categorised into IgE-mediated, non-IgE-mediated or a mixture of both.

Challenges of diagnosis in the primary care setting

The increasing prevalence of allergies and intolerances in the population has intensified reliance on primary care physicians for the diagnosis and management of mild to moderate cases.[3] Primary care service providers often feel poorly equipped to diagnose and manage specific cases involving food allergies and intolerances.[4] Research conducted in the UK and Ireland found that only 9-23% of primary care referrals to allergy clinics resulted in an allergy diagnosis and that with adequate training, half of those referrals could have been appropriately managed in primary care.[5, 6, 7] In supporting primary healthcare providers through education and clear referral guidelines, greater quality of healthcare, improved patient experience and cost-savings can be achieved.

Allergy diagnosis and management resources for healthcare professionals:

- National Institute for Health and Care Excellence (NICE) Guideline for Food Allergy in under 19s: assessment and diagnosis[8]
- EATERS[9]
- Royal College of Paediatrics and Child Health (RCPCH): Allergy Care Pathways for Children
- The Milk Allergy in Primary Care (MAP) Guideline[11]
- World Allergy Organisation (WAO) Diagnosis and Rationale for Action against Cows' Milk Allergy (DRACMA) Guidelines 2010.[12]

Allergies and intolerances in infants 0-6 months old

Breastfeeding is unequivocally the best way to feed an infant, with the health benefits to both mother and baby being well established. The immunologically active components and indigestible sugars contained within human breastmilk have the potential to protect against disease.[13] Breastfeeding, with the elimination of allergens via the maternal diet, is the best treatment option for infants who present with an allergy. While true lactose intolerance is extremely rare in breastfed infants it is important for healthcare professionals to be aware of its distinction from Cows' milk protein allergy (CMPA).

Cows' milk protein allergy (CMPA)

CMPA, an allergy to milk proteins casein and/or whey, is the most common and most complex food allergy in infants and young children. According to Allergy UK, CMPA affects 2-3% of infants living in the developed world. There are two types of CMPA:

1. Immediate or IgE-mediated allergy
2. Delayed or non-IgE-mediated allergy.

Exposure can occur either through breastfeeding (via cows' milk protein in the maternal diet) or when an infant is fed standard infant formula. The type of CMPA determines severity of symptoms, with the worse-case scenario being anaphylaxis. Once diagnosis is confirmed, strict avoidance of cows' milk protein is the safest management strategy. For an infant with CMPA who is exclusively breastfed this is achieved through elimination of cows' milk protein in the mother's diet, managed by a qualified healthcare professional. For an infant that receives mixed feeds or relies solely on formula, an extensively hydrolysed formula (eHF) or an amino-acid based formula (AAF) can be prescribed.[11, 14]

Table 1: Differences between a Food Allergy & Food Intolerance

	Food allergy		Food intolerance
	IgE-mediated	Non-IgE-mediated	
Trigger	A specific protein within a food	A specific protein within a food	A food or food component (not necessarily a protein)
Mechanism	The body's immune system identifies the specific protein as a threat and produces IgE antibodies which in turn release histamine into circulation	Mechanism is not well understood, the immune system is involved, but IgE antibodies are not released	Many possible mechanisms; lack of enzymes, the food itself. Does not involve the immune system
Symptoms	Mild to moderate: redness, swelling, itchiness and increased mucus production by the nose Severe: swollen tongue, difficulty breathing, anaphylaxis	Gut symptoms: Abdominal pain, vomiting, reflux constipation, diarrhoea, feeding difficulties Skin symptoms: redness, itchiness, worsening of eczema	Abdominal pain, diarrhoea, bloating, cramping, constipation, rashes, rhinitis, wheezing, headaches
Onset of symptoms	Minutes to hours	Hours to days	Dependent on quantity consumed
Diagnosis	Skin-prick testing and/or blood test for specific IgE antibodies	No clinical tests, diagnosed using a trial of elimination and reintroduction	No clinical tests, diagnosed using a trial of elimination and reintroduction
Treatment/ management	Allergen avoidance. Mild symptoms can be treated with anti-histamines and severe symptoms require adrenaline (EpiPen/Jext)	Elimination of specific protein containing food	Elimination of identified food
Example	Peanut, egg allergy, etc.	Cows' milk protein allergy	Lactose intolerance

Lactose Intolerance

Not to be confused with CMPA, infants with lactose intolerance have the inability to digest the carbohydrate lactose due to a complete or partial absence of the enzyme lactase. There are three different types of lactose intolerance:

1. Hereditary: an infant is born without any lactase. The condition is extremely rare, and symptoms typically occur after first feeds. Hereditary lactose intolerance is managed with a special formula containing an alternative carbohydrate source to lactose to ensure the continued nourishment, development and health of the child.
2. Primary: an infant is born with lactase, but the quantity decreases over time and symptoms increase. Primary lactose intolerance does not typically become apparent until after weaning.
3. Secondary: a temporary, but common, condition where GI illness induces a short-term state of lactase deficiency. Breastfeeding mothers are advised to continue to breastfeed and formula fed infants are advised to be switched to a lactose free infant formula for 6-8 weeks after which standard infant formula can be gradually reintroduced.[15]

Often typical symptoms of CMPA and lactose intolerance, such as reflux and loose stools, are common in healthy babies. Therefore, it is important that primary healthcare providers follow clinical diagnosis guidelines to ensure accurate diagnosis.

Allergies and intolerances when weaning

While an exciting milestone, the introduction of complementary foods into an infant's diet can be a nerve-wracking time for parents. Healthcare professionals have an important role in assisting parents to safely introduce allergenic foods into their child's diet.

Prior to weaning it is important to consider a child's risk of allergy. Infants are at a higher risk of developing a food allergy if they have eczema (particularly early-onset or moderate-severe eczema) or already have a diagnosed food allergy (e.g. CMPA). Research suggests that infants at a higher risk of developing a food allergy may benefit from the introduction of egg and peanut from 4 months, alongside other non-allergenic foods.[16]

It is recommended that once an infant shows the appropriate developmental signs, small amounts of non-allergenic pureed vegetables, fruit, starchy foods or protein may be offered. Allergenic foods can then be introduced once at a time with sufficient periods between introductions to allow potential reactions to become evident. It is important that parents and carers are made aware of the symptoms of an adverse reaction to aid diagnosis and ensure the safety of their child.

Foods that are commonly associated with food allergies and intolerances include:

- Cows' milk
- Egg
- Wheat
- Gluten
- Soya
- Sesame and other seeds
- Peanuts and tree nuts.

After a potentially allergenic food has been introduced into a baby's diet, and no adverse reaction has been observed (see **Table 2**), inclusion should be continued, and the food given at least twice a week. For further resources on the introduction of allergenic foods visit Allergy UK and BSACI.

Post-weaning allergy management

Primary care providers with a paediatric patient who presents with signs of an adverse reaction to a food should follow their relevant care pathway. When managing the treatment of an infant or child with a food allergy or intolerance, healthcare professionals are advised to closely and regularly monitor the growth of their patient and be aware of signs of malnutrition. The management of food allergies and intolerances require either total or partial elimination of offending foods. The nutritional complications of this elimination can lead to a higher risk of growth failure, low intake of micronutrients, deficiency and feeding difficulties.[2] It is the responsibility of the healthcare professional, in partnership with parents and carers, to support an infant or child with allergies or intolerances to thrive.

Infants and young children with mild to moderate non-IgE-mediated allergies and food intolerances can often grow out of their condition, enabling the safe incorporation of triggering food/s in their diet. Any re-introduction of an allergen must occur in a supervised manner and in accordance with relevant clinical guidelines. For example, children who have non-IgE-mediated CMPA may be reintroduced to cows' milk in a step-wise manner, as outlined in the iMAP Milk Ladder.[17]

Table 2: Signs of a Reaction to Food

IgE-mediated allergy	Non-IgE mediated allergy	Food intolerance
• Red, itchy skin, hives • Swelling around lips, eyes and mouth • Swelling of lips, tongue and palate • Colicky abdominal pain • Nausea, vomiting, diarrhoea • Nasal itching, sneezing, congestion • Coughing, chest tightness, wheezing • Anaphylaxis	• Red, itchy skin • Atopic eczema • Reflux • Loose/frequent stools • Abdominal pain • Blood/mucus in stools • Constipation • Tiredness • Infantile colic • Food refusal	• Abdominal pain • Bloating • Flatulence • Diarrhoea • Skin rash • Skin itching

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