

South East London Guideline for the Management of cows' milk protein allergy in Primary Care

Approval date: April 2019

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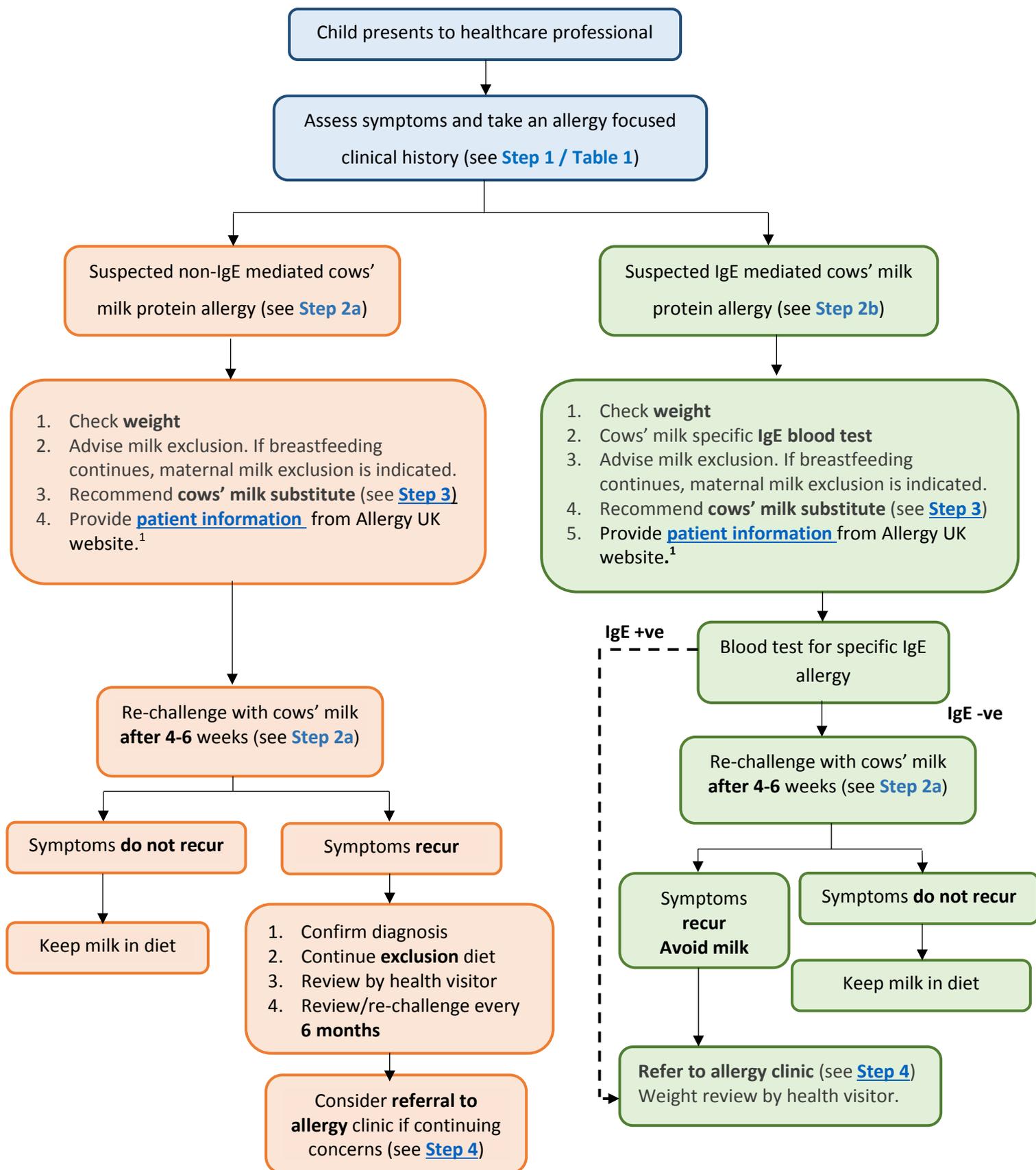
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Cows' Milk Protein Allergy Algorithm



Introduction

The management of infants and children with suspected cows' milk protein allergy (CMPA) is complex. This guideline is aimed at supporting doctors and health visitors in primary care, in the management of children with cows' milk protein allergy, at the point at which they present. Cows' milk protein allergy is an immune-mediated allergic response to proteins in milk. It includes referral guidance for children with cows' milk protein allergy to paediatric dietetic and allergy clinics.

This guideline is consistent with the international Milk Allergy in Primary Care [iMAP guidelines](#)² and provides recommendation on the presentation, diagnosis and management of cows' milk protein allergy in primary care.

Background

Cows' milk protein allergy typically presents in the first year of life and affects approximately 2-3% of infants.³ Most children outgrow immunoglobulin E (IgE) mediated allergy by 5-6 years, non-IgE mediated CMPA is usually outgrown sooner.³

Children can continue to achieve tolerance well into adolescence.

Milk allergy is more likely to persist in individuals with multiple food allergies (such as egg allergy) and/or concomitant asthma and allergic rhinitis.²

IgE and non IgE mediated cows' milk protein allergy

The immune response to cows' milk protein can be subdivided into **IgE-mediated allergy** and **non-IgE-mediated allergy** (previously cows' milk intolerance) see [NICE CG116](#)⁴.

Table 1: Signs and symptoms of cows' milk protein allergy

	Non-IgE-mediated ⁴ (previously cows' milk intolerance)	IgE-mediated
Presentation	Delayed reaction presenting several hours and up to 72 hours after milk ingestion.	Acute allergic reaction usually occurring minutes after milk ingestion, with the majority within 1 hour (can occur up to 2 hours).
Skin	<ul style="list-style-type: none"> • Pruritus • Erythema • Significant atopic eczema 	<ul style="list-style-type: none"> • Pruritus • Erythema • Acute urticaria • Acute angioedema • Acute flare of atopic eczema
Gastrointestinal	<ul style="list-style-type: none"> • Infantile colic • Vomiting • Gastro-oesophageal reflux disease (GORD) with poor response to anti-reflux medication (see appendix 5) • Food refusal/aversion • Loose/frequent stools • Perianal redness • Constipation • Faltering growth • Abdominal discomfort • Blood and/or mucus in stools • Pallor and tiredness 	<ul style="list-style-type: none"> • Angioedema of the lips, tongue and palate • Extreme colic • Vomiting • Diarrhoea
Respiratory <i>(usually in combination with other symptoms)</i>	<ul style="list-style-type: none"> • Rhinorrhoea • Nasal congestion 	<ul style="list-style-type: none"> • Rhinorrhoea • Sneezing • Nasal congestion • Anaphylactic reaction • Cough • Wheezing • Shortness of breath

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STEP 1 – Assess likelihood of IgE or non-IgE-mediated allergy

- Feeding history – check the source of cows' milk e.g. is the infant milk fed (breastmilk/formula) or weaned onto solids.
- Ask about **age** of first onset, **speed** of onset and **severity** following milk ingestion. Also ask about previous management including medication use and response.
- An **allergy-focused clinical history** is the cornerstone of the diagnosis. A history of eczema, asthma, hay fever, allergic rhinitis or food allergy is more likely in IgE-mediated food allergy.
- A family history of atopic disease in parents or siblings makes IgE-mediated allergy more likely.
- Weigh and measure the child to assess growth.
- Examine the child to check for signs of allergy related comorbidities e.g. atopic eczema.

STEP 2a – Confirming diagnosis and manage Non-IgE-mediated cows' milk protein allergy

1. **Advise a trial elimination of cows' milk for a period of 4-6 weeks**⁵⁻⁷
 - Verbal *and* written advice should be provided on the avoidance of food containing cows' milk protein. Patient information sheets are available from [Allergy UK](#)⁸, British Dietetic Association [BDA](#)⁹ and [NHS](#)¹⁰.
 - If symptoms do not improve (and exclusion has been adhered to) then it is not CMPA, consider alternative diagnosis.
 - If symptoms improve on exclusion, then CMPA is likely but a re-challenge is essential to confirm diagnosis (especially if other treatment options have been started concurrently).
 - See [step 3](#) and [appendix 1](#) for exclusion and replacement advice; consider both maternal & infant diet (milks and solids) as appropriate.
 - Consider additional soya exclusion if remains symptomatic, seek advice from paediatric dietician (see [contact information](#)).
2. **Re-challenge to confirm the diagnosis of Non-IgE-mediated cows' milk protein allergy (after 4-6 week exclusion)**⁵⁻⁷
 - Explain to parents why the reintroduction phase is essential.
 - If the infant is exclusively breastfed introduce cows' milk back into the diet of the mother.
 - If the child is formula or mixed-fed reintroduce cows' milk formula. The iMAP guide on re-challenging with CMPA gives parents a structured approach to formula reintroduction, click ([here](#)).
 - If the child has been weaned onto solid foods, then reintroduce cows' milk into the diet and return to cows' milk-based formula.
 - If symptoms do not return then the diagnosis is not CMPA, or the CMPA has been outgrown.
 - If symptoms return with the challenge, then return the child to a strict CMPA free diet and **see next step**.
3. **Ongoing management of non IgE-mediated cows' milk protein allergy**⁵⁻⁷
 - Strict avoidance of cows' milk protein for at least 6 months or until the child is 9-12 months old.
 - Evaluate the child every 6 months. Monitor the child's weight to assess growth, nutrition and assess whether they have developed any tolerance to cows' milk protein with a challenge of cows' milk protein. If symptoms recur, continue cows' milk avoidance management.
 - Seek advice from a paediatric dietitian for guidance on nutritional adequacy and re-introduction of milk protein. Click to see the **milk ladder** ([here](#))¹¹.

STEP 2b – Manage IgE-mediated cows' milk protein allergy

- Consider a cows' milk specific IgE antibody test, only after taking an allergy focused clinical history.
- If **negative**, consider management in line with non-IgE-mediated symptoms or an alternative diagnosis, (see [step 2a](#)).
- A **positive** result is ≥ 0.35 kuA/L and along with a positive clinical history would support the diagnosis of IgE-mediated cows' milk protein allergy. Also check specific IgE to egg and peanut in children with resistant eczema.
- Advise total exclusion of cows' milk from diet.
- Recommend cows' milk replacement. **Extensively Hydrolysed Formula (eHF) as first-line** for mild to moderate IgE-mediated CMPA. See [step 3](#) and [appendix 1](#).
- Consider **Amino Acid Formula (AAF) if severe CMPA**, (see [step 3](#)).
- Provide the parents/carers with appropriate information on what cows' milk protein allergy is, and the potential risks of a severe allergic reaction.
Information sheets from [Allergy UK¹²](#) and [BDA¹³](#) websites.
- Discuss the diagnostic process and direct the parents/carers to relevant support groups ([Allergy UK](#), [Anaphylaxis Campaign¹⁴](#)).
- Provide a management plan to parent/carers. Templates for management plans are available on the **British Society for Allergy and Clinical Immunology** website, click ([here](#)).
- **Infants with IgE mediated cows' milk protein allergy should be referred to the paediatric allergy clinic following recommendation of an appropriate milk substitute.**

STEP 3 – Advise about cows' milk free diet

See [Appendix 1](#): for the **Formulary**

Table 2: General recommendations for milk free feeds

Exclusively breastfed	Formula (+/- Breastmilk)	Taking solids
<ul style="list-style-type: none"> • Recommend exclusive breastfeeding for 26 weeks (6 months) • If an exclusively breastfed child is symptomatic, advise mother to exclude cows' milk protein from her diet. A maternal milk substitute should be advised e.g. soya milk. Refer to a dietitian if appropriate. • Women on a milk free diet should take a daily supplement of 1000mg calcium and 10mcg Vitamin D, click (here). 	<ul style="list-style-type: none"> • Advise on the replacement of cows' milk based formulas with an extensively hydrolysed formulas (eHF) as first line. • For mixed fed infants, if symptoms occur only with the introduction of top-up formula feeds, replace these with eHF top-ups. The mother can continue to consume foods containing cows' milk protein (CMPA). • For mixed feeding refer mother to local specialist/additional breastfeeding support for support with return to exclusive breastfeeding or increased breastmilk if this is mother's choice. 	<ul style="list-style-type: none"> • Advise parents/carers to exclude cows' milk protein from the child's diet. • Advise on a suitable milk alternative. • OTC soya formula can be recommended for infants > 6 months, but if this is not tolerated (suggesting a soya allergy/a soya intolerance) a milk-free formula should be prescribed. Infants who have been prescribed formula < 6 months can continue this after 6 months of age. • Introduce milk free solids no earlier than 17 weeks.

Prescribing Advice of formula milk

Prescribe only 2-3 tins initially until compliance/tolerance is established to avoid waste. Review at 1-2 weeks or issue a second prescription with enough to last 1 month if the baby tolerates this milk formula, review at 3-4 weeks.

Table 3: Suggested monthly amounts (vary with large size and stage of weaning)

Age	General advice	Formula quantity
<6 months	Infants under 6 months being exclusively formula fed and drinking 150ml/kg/day of a normal concentration formula.	13 x 400g
6-12 months	Infants 6-12 months requiring less formula as solid food intake increases.	7-13 x 400g
12 months plus	Children over 12 months requiring less formula as solids are the primary source of nutrition.	7 x 400g

- Some children may require larger quantities e.g. faltering growing. Review recent correspondence from the paediatrician or paediatric dietitian.
- Please refer to paediatric dietetic service if there are problems with introduction of solids at this stage.
- Prescribing of hypoallergenic milks is governed by the **Advisory Committee on Borderline Substances (ACBS)**. ACBS advice takes the form of its 'recommended list' which is published as Part XV of the Drug Tariff. Endorse prescription for formula feed with 'ACBS'.

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Please note some key points

- **Extensively Hydrolysed Formula (eHF) should be used first-line.** Patients unresponsive or partially responsive to a trial of two different eHFs can be progressed to Amino Acid Formula (AAF). At least 90% of children with proven CMPA should tolerate these feeds.¹⁵
- **AAF should only be prescribed for severe IgE-mediated allergy**, enterocolitis, faltering growth, multiple food allergies, GORD, severe early onset eczema when breastfed, breastfeeding infants still symptomatic on maternal elimination diet or if no improvement after 4 weeks on eHF. Only 10% of infants with CMPA should require management with AAF.¹⁵
- **Soya based formula (e.g. Wysoy®) can be used first line from 6-12 months, (not to be prescribed).** Soya should not be used at all for those under 6 months due to high phyto-oestrogen content.
- Full fat soya milk is suitable for children from 1 year of age after the child's diet is assessed as adequate, **(not to be prescribed).**
- If child is allergic to soya and cows' milk then refer to a dietitian.
- Alternative plant milk drinks are suitable for children from 2 years of age or from 6 months if used for food preparation (unless advised by a dietitian). They must be non-organic in-order to contain **sufficient calcium**. Some alternative calcium fortified, plant-based milk drinks are suitable as a drink from 1 year of age **if advised by a dietitian** once the child's diet has been assessed.
- Children under 5 years of age should not be fed rice milk as it contains arsenic.
- Other mammalian milk proteins (including unmodified cow, sheep, buffalo, donkey, camel, horse, or goats' milk/formula) are not recommended for infants with cows' milk protein allergy. Most are not adequately nutritious to provide the sole food source for infants and there is a risk of allergenic cross-reactivity with cows' milk.
- All children under 5 years of age require vitamin D supplements unless they are taking > 500mls infant formula per day. See [BDA Food Fact Sheet - vitamin D¹³](#) and [NHS vitamin D](#).
- **Infants on a milk free diet should be weighed 6 weeks after initiation of new feed and then regularly thereafter by the health visitor and their weights plotted in the red book.**
- Information about achieving adequate calcium requirements can be provided from the BDA and NHS. See [BDA food fact Sheet - calcium¹³](#) and [NHS calcium](#).
- **If symptoms do not improve on an elimination diet, re-introduce cows' milk protein and refer to a paediatrician.**
- **Do not routinely prescribe formula for children over 2 years of age unless recommended by dietitian or paediatrician.**

STEP 4 – When to refer

Note: Seek advice and guidance via electronic Referral System (eRS) if any uncertainty

Refer to paediatric dietetic service:

- Every child with CMPA should have a dietary/nutritional assessment with a suitably qualified healthcare professional e.g. dietitian, GP or healthcare visitor.
- If there is concern about the nutritional adequacy of the child's diet and faltering growth across 2 centiles on a milk free diet, refer to paediatric dietitian.
- If the mother is having difficulty getting the baby to take a milk free formula.
- If the parents would like support around reintroduction of cows' milk protein.
- Refer breastfeeding mothers for dietetic support (adult) if they wish to remove milk from their own diets and there are additional risk factors or concerns about their nutritional status.
- Referral criteria and access to community/specialist support vary across South East London. Please follow local pathway.

Refer to paediatric allergy service (which includes paediatric allergy dietetic assessment and advice)

Patients who present with, or develop any of the following symptoms/situations during primary care management:

- A clinical history strongly suggestive of IgE-mediated cows' milk allergy (with positive or negative allergy tests)
- An acute systemic reaction involving wheezing, difficulty breathing, drowsiness, loss of consciousness
- A severe delayed reaction
- A history of reacting to other foods (multiple food allergies)
- Has or develops asthma (which puts him/her into a higher risk group for having a more severe allergic response to milk following accidental ingestion).
- Faltering growth, especially in combination with any gastro-intestinal symptoms
- If symptoms do not respond to exclusion of cows' milk
- Persisting parental/carer suspicion of food allergy or concern once primary care measures have been tried.

Risk of developing Other Allergies

- Children with cows' milk protein allergy are more likely to develop other allergies. If an infant is reacting to other food proteins in addition to cows' milk (for example egg) it is vital that this food protein and its derivatives are removed from the diet as well. Children with multiple food allergies should be referred to a paediatric allergy service.
- The risk of nutritional deficiencies is increased when multiple food groups are excluded from the diet. Unnecessary food exclusion should be avoided, and multiple food avoidance should be supervised in a paediatric allergy clinic.

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Contact Information

CCG	Local Dietetic services	Local Allergy services	Health visitors and breastfeeding support
Bexley	Dietetic Service at Queen Mary Hospital Sidcup is operated by Dept of Nutrition and Dietetics, Darent Valley Hospital, Darent Wood Road, Dartford, Kent DA2 8DA, Tel: 01322428439 Email: dvh.dietitians@nhs.net	Paediatric Allergy Service Queen Elizabeth Hospital Stadium Road London SE18 4QH Tel: 020 8836 6222	Bexley 0-4 Children's Public Health Service Breastfeeding support Tel: 0300 330 5777
Bromley	Bromley Healthcare, Beckenham Clinic, 14 The Crescent, Beckenham, BR3 1DU Email: BROMH.childrensdietitians@nhs.net Tel: 0208 662 6688	Paediatric Allergy Service, Princess Royal University Hospital, Farnborough Common, Orpington, BR6 8ND Tel: 01689 863000	Bromley 0-4 years Health Visitors Tel: 020 8836 8621 Bromley Breastfeeding groups
Greenwich	Greenwich Community Paediatric Dietitians 3 Wensley Close Eltham SE95AB Email: oxl-tr.childrenstherapies@nhs.net Tel: 0208 294 3111	Paediatric Allergy Service Queen Elizabeth Hospital Stadium Road London SE18 4QH Tel: 020 8836 6222 All consultant referrals for allergy clinic via eRS except dietetic referrals.	Oxleas Health Visiting Tel: 020 8836 8621 Oxleas Breastfeeding
Lambeth & Southwark	Paediatric Allergy Dietitians 2 nd Floor B Block, South Wing St Thomas' Hospital Westminster Bridge Road London SE1 7EH Email: gst-tr.allergypaediatrics@nhs.uk	Children's Allergy Service 2 nd Floor, Block B, South Wing, St Thomas's Hospital Westminster Bridge Road London SE1 7EH Tel: 020 7188 3300 Email: gst-tr.allergypaediatrics@nhs.uk All referrals via eRS	Lambeth & Southwark Health Visitor teams Tel: 020 3049 5300
	Paediatric Dietitians Unit 6, The Business Park Kings College Hospital Denmark Hill London SE5 9RS Direct line (referrals, appointments): 020 3299 1812 Answer machine and direct line for children's dietitians: 020 3299 4434	Paediatric Allergy Service King's College Hospital Denmark Hill London SE5 9RS Tel: 020 3299 4647 Email: kch-tr.kingspaedallergy@nhs.net All referrals via eRS	Breastfeeding support for Lambeth & Southwark
Lewisham	Nutrition and Dietetic Department Suite 9 University Hospital Lewisham Lewisham High Street London SE13 6LH Email: tlh-tr.LewishamDietetics@nhs.net Tel switch board: 020 8333 3000 Tel dietetic department: 020 8333 3314	Paediatric Allergy Clinic University Hospital Lewisham Lewisham High Street London SE13 6LH Tel: 020 3192 6824 Allergy Nurse Specialist: 023 8192 6144 Email: LG.PaedAllergy@nhs.net	Lewisham Health Visitors Tel: 020 3049 1873 Breastfeeding hubs in Lewisham

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Appendix 1: Hypoallergenic Milk Formulas

Choice of formula within each group should not be dependent on the cost of formula alone; additional benefits seen with formulas incorporating a prebiotic or probiotic (e.g. LGG) can include a more rapid resolution of symptoms and a reduced likelihood of developing other atopic problems. They may be preferred when symptoms are severe or where there is a personal or strong family history of atopic problems. If a baby does not settle on one eHF they may settle with another eHF with a different base.

[Paediatric dietitians](#) in each CCG are happy to offer advice about choice of eHF where referral to an allergy clinic is not needed or

Extensively Hydrolysed Formulas (eHF) (Cost range: £0.43-0.55/100kcal or ~£1092 - £1319 per patient per year)		
First line and alternative eHF	Age Range	Notes
* Similac Alimentum ® (400g) (Abbott)	Birth to 2 years	Casein based, lactose free
Aptamil Pepti 1 ® (400g/800g) Aptamil Pepti 2 ® (400g/800g) (Danone Nutricia)	Birth to 6 months 6 months – 2 years	Whey based, contains lactose, more palatable for infants who have started weaning. Contains prebiotic oligosaccharides
* Nutramigen 1 with LGG ® (400g) * Nutramigen 2 with LGG ® (400g) (Mead Johnson)	Birth to 6 months 6 months to 2 years	Casein based Lactose free Note: preparation instructions differ to other milk formulas. Contains probiotics. Not suitable for premature or immunocompromised infants.
Althera ® (450g) (Nestlé)	Birth to 3 years	Whey based, contains lactose, medium chain triglycerides (MCT), more palatable for infants who have started weaning.
* Nutramigen 3 LGG ®	For children from 1 year	Should not be routinely prescribed at 12 months old as a follow-on milk.
Notes		
<ul style="list-style-type: none"> If first line formula is not tolerated/accepted, STOP and then trial an alternative eHF. For infants with severe diarrhoea trial lactose free eHF first-line. Nutramigen 1 & 2 with LGG® and Neocate Syneo® should be prepared with boiled water cooled down to room temperature (not 70°C). Note: This is currently not in line with DOH guidance on safe preparation of infant formula and parents should be made aware of the risk of infection. Consider AAF if trial of two different eHF products have not been tolerated. 		
Amino Acid Formula (AAF) for severe CMPA (Cost range: £1.14-1.35/100kcal or ~£2760 - £3251 per patient per year) DO NOT INITIATE IN PRIMARY CARE UNLESS SEVERE CMPA unresponsive or partially responsive to eHF		
Amino Acid Formula	Age Range	Notes
SMA Alfamino ® (400g) (Nestle)	Birth to 3 years	Contains MCT. Caution if giving fat soluble vitamin drops in addition, due to vitamin A content
Neocate LCP ® (400g, Nutricia)	Birth to 12 months	
* Nutramigen Puramino ® (400g, Mead Johnson)	Birth to 2 years	Contains MCT
Neocate Syneo ® (400g, Nutricia)	From birth	Amino acid formula with pre- and probiotics. Not suitable for premature or immunocompromised infants.
High Calorie Amino Acid Formula		
Neocate Junior ® (400g, Nutricia)	Children 1-10 years	Should not be routinely prescribed at 12 months old as a follow-on milk. Generally recommended when an infant has multiple food allergies and/or faltering growth.
Notes		
*Soya oil is very highly refined and doesn't routinely cause symptoms.		

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Appendix 2: Other dietary requirements (halal & kosher formulas)

Milk name	Manufacturer	Halal	Kosher	Specific notes from individual manufactures
Puramino®	Mead Johnson	Yes	Yes	<p>Abbott Confirm no eHF is Halal as they have no alternatives for breaking down the protein.</p> <p>Nutramigen Fish oils and pork-based membrane used in production.</p> <p>Nutramigen and Pregestimil Not vegetarian or Halal approved. They use pork enzyme to break down the protein. This equates to: In a standard concentration of feed there is 0.0125% pork enzyme in 100ml of feed.</p> <p>Aptamil Pepti and Pepti junior Not Halal approved. No animal ingredients. However, animal (calf) rennet is used in the processing of the feed.</p>
Nutramigen LGG®	Mead Johnson	No	No	
Nutramigen 3®	Mead Johnson	No	No	
Aptamil Powder®	Danone/Nutricia	Yes	No	
Aptamil Ready to drink bottles	Danone/Nutricia	No	No	
Aptamil Pepti®	Danone/Nutricia	No	No	
Alfamino®	Nestle	Yes	No	
Neocate Syneo®	Nutricia	Yes	Yes	
Neocate LCP®	Nutricia	Yes	Yes	
Neocate Junior®	Nutricia	Yes	Yes	
Fortini range®	Nutricia	Yes	Yes	
Wysoy®	SMA	Yes	No	
Similac Alimentum®	Abbott	No	No	

Note: formulations may be subject to change at the discretion of the manufacturers.

Specific notes from SMA:

None of the SMA products are kosher. SMA have confirmed that many of their raw materials are Kosher but the factories do not have Kosher certification currently.

Appendix 3: Allergy Testing Advice for Children from General Practice

Introduction

Allergic diseases are common, affecting up to 40% of British children. Although specialist advice within hospitals is available for difficult cases, many children with straight forward allergies can be managed in general practice.

Taking a History

Diagnosis of allergic diseases is primarily made by taking a detailed history of exposure and reactions, and by physical examination. Children from families where other family members also have allergic disease are particularly at risk. On the basis of the history, clues should emerge which can then be confirmed by performing allergy tests.

Allergy Tests

The most appropriate tests for diagnosing allergy in general practice are specific IgE tests (RAST tests). These should only be performed to **confirm a suspected diagnosis**. Allergy tests may not be needed in children presenting with non-IgE-mediated cows' milk protein allergy and it does not influence management. Screening, using large panels of tests is inappropriate. Testing should be considered in children aged 2 months and above presenting with allergic conditions.

Allergic Conditions

The immunology laboratory can measure specific IgE to an enormous variety of allergens. If the patient presents with a specific allergy, then request IgE to the particular allergen. The following is a list of allergic conditions with their commonly associated allergens. Specific IgE blood tests are available to all these allergens (this is not an exhaustive list):

Allergens	
Food Allergy	Cows' milk, egg white, wheat, soya, peanuts, tree nuts, fish, shellfish, sesame
Atopic eczema	Cows' milk, egg, soya, wheat, house dust mite, cat, dog, tree pollen, grass
Asthma	House dust mite, cat, dog, tree pollen, grass pollen, mould
Seasonal rhinitis/conjunctivitis	Grass pollen, tree pollen, mould
Perennial rhinitis/conjunctivitis	House dust mite, cat, dog
Bee and wasp stings	Bee and wasp venom
Latex allergy	Natural rubber latex

Requesting an allergy test

Selection of allergens to be tested should be based on the history of exposure and reactions.

It will be necessary to limit the number of tests in very small children, to those thought to be the most important. Please specify which individual allergens you would like the child tested for.

Interpreting the test

Specific IgE results ([see table 4](#)) should be read in conjunction with the clinical history. A test result of >0.35 kuA/L indicates sensitisation.

Higher values are more likely to indicate clinical allergy. A **low level** of specific IgE (grade 1 or 2) may be more significant in younger children (less than 2 years of age), and an **intermediate level** of specific IgE (grade 2 or 3) may be less significant in a child with severe atopic dermatitis or a child who is outgrowing a more severe allergy. Some patients have a positive specific IgE but do not react on exposure to the allergen, whilst others may have a negative specific IgE yet still react to allergen. **Where there is a discrepancy between the clinical history and the specific IgE result, patients should be referred to a paediatric allergy clinic for further evaluation.**

Table 4: Interpreting Test Results

*ImmunoCAP Grade	Level of allergen specific IgE antibody (kuA/L)	Comment
6 – Strong positive	100+	Very high. Refer to patient history.
5 – Strong positive	50-100	Very high. Refer to patient history.
4 – Strong positive	17.5-50	Very high. Refer to patient history.
3 – Positive	3.5-17.5	High. Grades 1-3 vary in significance dependent on allergen. Consider patient history and risk of severe reaction/anaphylaxis.
2 – Positive	0.7-3.5	Moderate
1 – Low, weak positive	0.36-0.7	Low. Grade 1 to inhaled allergens is of doubtful significance. Grade 1 to foods or moulds of greater significance.
0 – Undetectable, negative	0.35	Absent or undetectable.

* A sensitive blood test that measures the concentration of immunoglobulin E (IgE), which is an indicator of allergic sensitisation.

Appendix 4: Other Milk Related Conditions

1. Cows' Milk Protein Proctocolitis

Presents with blood or mucus in the stool of happy, thriving breast fed babies, following ingestion of, or maternal ingestion of milk protein. It improves when cows' milk protein is eliminated from the maternal diet. If mother wishes to introduce formula offer a suitable milk free formula. This usually resolves by a year of age, when normal cows' milk can be re-introduced. This is a non-IgE-mediated cows' milk protein allergy.

2. Lactose Intolerance

This is a condition which occurs as a result of a deficiency of the lactase enzyme in the intestine, it is not the same as cows' milk protein allergy. It usually occurs in children who were previously able to tolerate cows' milk. Symptoms occur as a result of lactose malabsorption; abdominal distension, abdominal pain and diarrhoea.

- **Primary lactose deficiency** occurs in up to 70% of the world population, although it is uncommon in Western Europe. It is due to a decline in activity of the lactase enzyme, which can occur at varying rates, from a few months of age.
- **Secondary lactose intolerance** is a temporary phenomenon, which results from injury to the gut wall following acute gastroenteritis. This usually resolves within a 2-4 weeks. Treat with a lactose free diet including lactose free milk. For infants under 1 year lactose free milk formula is available OTC. **If exclusively breastfed**, breastfeeding should continue. **If not breastfed** soya formula can be used in children from 6 months onwards. **For infants over 1 year lactose free milk can be purchased over the counter by the parents/carers.**

3. FPIES (Food Protein-Induced Enterocolitis Syndrome)

FPIES is a rare condition which presents in infants with profuse vomiting, diarrhoea, acidosis and shock, 1-3 hours after ingestion of milk or other food proteins.

- The child may be assessed for sepsis.
- It may be associated with a raised white cell count but the child is afebrile and stool samples are clear.
- **FPIES requires hospital referral.**
- This is a non-IgE-mediated food allergy.

Appendix 5: Gastro-Oesophageal Reflux

GASTRO-OESOPHAGEAL REFLUX	
<p>Gastro- oesophageal reflux (GOR) is the passage of gastric contents into the oesophagus. It is a normal physiological process that usually happens after eating in healthy infants, children, young people and adults. Gastro- oesophageal reflux disease (GORD) occurs when the effects of GOR leads to symptoms severe enough to require medical treatment.</p>	
Symptoms of GORD	
<p>Unexplained feeding difficulties (refusing to feed, gagging or choking), vomiting, regurgitation, distressed behaviour, faltering growth, chronic cough, hoarseness and a single episode of pneumonia.</p>	
Treatment of GOR and GORD	
<p>In well infants with/without effortless regurgitation of feeds, provide reassurance and monitor. Symptoms resolve in 90% of infants by aged 1 year of age. Do not routinely investigate if presenting with only one of above symptoms. Seek advice from a health visitor on responsive, paced bottle feeding and/or breastfeeding specialist.</p> <p>In breastfed or formula fed infants with frequent regurgitation and marked distress take a stepped care approach (as per NICE guidelines NG1: Gastro-oesophageal reflux disease in children and young people: diagnosis and management.¹⁶</p>	
Breastfeeding	Formula feeding
<ol style="list-style-type: none"> Complete feeding assessment advise patient to see health visitor/infant feeding advisor. Alginate therapy for a trial period of 1–2 weeks. If successful continue but try stopping at intervals to see whether it is still required. Consider cows' milk exclusion. 	<ol style="list-style-type: none"> Review feeding history including overfeeding, positioning and activity. Trial smaller, more frequent feeds 6-7 x day (aim to meet requirements of 150ml/kg) 1-2 week trial of OTC thickened formula (see below). DO NOT PRESCRIBE. Stop thickened formula and offer alginate therapy for a trial period of 1–2 weeks. Consider cows' milk protein allergy.
Review	
<p>If symptoms persist despite stepped care approach, consider pharmacological treatment (e.g. H₂ antagonists), sharing risks and benefits of medication with parents (refer to NG1), or a trial of cows' milk protein exclusion (see Red Flags for CMPA).</p> <p>There is little evidence for the efficacy of PPI's in infants <1 year, in this group use H₂ antagonists. In older children PPI can be trialled. Use a 4 – 8 weeks trial of acid suppression then wean if symptoms improved¹⁵.</p>	
Red Flags	
<p>Red Flags for possible CMPA – if present, consider 2- 4 weeks of cows' milk protein exclusion (maternal if breastfed, eHF if formula fed) under dietetic guidance, before a trial of H₁ antagonist¹⁶:</p> <ul style="list-style-type: none"> Existing atopic disease, in particular eczema in infants First degree relative with food allergy or atopic disease More than one of the following are present: GOR/GORD, chronic loose stools, blood or mucus in stools, abdominal pain, food refusal or aversion, constipation, peri-anal redness, pallor and tiredness, faltering growth in conjunction with one or more gastrointestinal symptoms (with or without atopic eczema).¹⁶ 	
Referral onwards	
<p>Urgent (same day) referral is required if a child presents with:</p> <ul style="list-style-type: none"> Bile, blood stained vomit, projectile vomiting, melaena and/or dysphagia. <p>Referral to secondary care is required in infants presents with:</p> <ul style="list-style-type: none"> persistent pain (requiring on-going medical therapy), faltering growth, iron deficiency anaemia, regurgitation persisting beyond 12 months old, suspected Sandifer's syndrome and persistent feeding aversion. <p>Referral to gastroenterology services is also required after failed trial of milk exclusion / H₁ antagonist in infants with red flags for CMPA or after a failed trial of H₁ antagonists only, in infants with no red flags for CMPA.</p>	

Table 5: Thickened Formula

Thickened Formula - Available OTC DO NOT prescribe		
Aptamil® Anti-Reflux (900g) (Milupa)	From birth until 12 months	Contains carob bean gum
Cow and Gate® Anti-Reflux (900g)		Contains carob bean gum
SMA® Anti-Reflux (800g)		Contains corn starch
NOTES		
<ul style="list-style-type: none"> • Alternatively, prescribe Carobel to add to regular milk formula and titrate as needed • Do not use thickened formula alongside alginate therapy e.g. Gaviscon. • Parents should refer to manufacturers' guidance on how to prepare thickened formula. <p>Note: This is currently not in line with DOH guidance on safe preparation of infant formula and parents should be made aware of the risk of infection.</p> <ul style="list-style-type: none"> • If symptoms resolve continue but review and trial infant first milk at intervals. 		

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 GSTFT/KCH/SLAM/Oxleas NHS Foundation Trusts & Lewisham & Greenwich NHS Trust

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