Flowchart for managing Cow’s Milk Protein Allergy (CMPA)

Symptoms suggest CMPA (see diagnosis page) - Commonly:
- History / Family history of atopy
- Symptoms involving 2 or more systems

Mild to moderate Symptoms
- No immediate reactions (usually non-IgE mediated)

Severe Symptoms And /or
- Acute reaction (Usually IgE mediated)

Exclusively breastfed
If at all possible, encourage exclusive breastfeeding

Formula Fed or mixed feeding

Trial of Maternal strict milk free diet (Appendix A)

Trial of Extensively Hydrolysed Formula (EHF)
1. Prescribe 2 tins, e.g. Similac Alimentum or Nutramigen, Aptamil Pepti, Althera initially (more tins may be needed before the 2 weeks review if quickly accepted)
2. Advise milk free diet if started solids (Appendix B1)

Review after minimum 2 weeks

EHF not accepted
- Consider alternative EHF (see formulary)
  Or Trial of soya formula if >6months
  Advise Wysoy OTC

Some Improvement
- Consider extending trial for a further 2 weeks
  Or Consider excluding Soya as well if started solids Appendix B2
  Or Consider trial of Amino Acid formula

Improvement
- Confirm diagnosis with Home Milk Challenge (See appendix C)

No improvement
- Consider alternative diagnosis Or
  Consider referring to, or seek advice from secondary care

CMPA diagnosed
- Formula fed:
  - Prescribe suitable formula
    (Or advise Wysoy OTC)
  - Provide with resources/signpost to websites
  - Refer to trained Professional or Paediatric Dietitian

Breastfed:
- Advise mother to take daily 1000 mg Calcium + 10 µg (400IU) Vit D OTC

Symptoms return
- YES
- NO

Not CMPA
- Stop milk free diet

Secondary Care led
1. Maternal milk free diet And/Or
2. Suitable formula, e.g. SMA Alfamino or Wysoy if >6m
3. Milk free diet if started solids
4. Clear communication and f/up plans

Referral to secondary care
Include Allergy Focused History Appendix J

Formula Fed or mixed feeding

Severe Symptoms
- And /or
- Acute reaction (Usually IgE mediated)

Formula fed:
- Prescribe suitable formula
  (Or advise Wysoy OTC)

Breastfed:
- Advise mother to take daily 1000 mg Calcium + 10 µg (400IU) Vit D OTC

Continued strict milk free diet until about 1 year of age, or for 6 months after diagnosis (NICE, 2011)

Advice on re-introduction of milk proteins using the Milk Ladder (Appendix D)
**Diagnosing CMPA (from NICE Guideline 116, iMAP and BSACI)**

Cow’s Milk Protein Allergy (CMPA or CMA) is the most clinically complex individual food allergy and therefore causes significant challenges in both recognising the many different clinical presentation and also the varying approaches to management, both at primary care and specialist level.

### Allergy-focused clinical history (adapted from Skypala et al. 2015) – See form in Appendix J

- Personal/family history of atopic disease (asthma/atopic dermatitis/allergic rhinitis) & food allergy
- Presenting symptoms and other symptoms that may be associated with CMPA (see below)
  - Age at first onset and speed of onset
  - Duration, severity and frequency
  - Setting of reaction (home, outside...)
  - Reproducibility of symptoms on repeated exposure
- Feeding history
  - Breast fed/formula fed (if breastfed, consider mother’s diet)
  - Age of introduction to solids
  - If relevant, details of any foods avoided and why
- Details of previous treatment, including medication for presenting symptoms and response to this
- Any response to the elimination and reintroduction of foods

### Acute symptoms (minutes) ➔ Refer to secondary care

- Abdominal pain / Colic / excessive crying
- Vomiting (repeated or profuse)
- Diarrhoea (Rarely a severe presentation)
- Urticaria
- Acute pruritus
- Angioedema
- Erythema
- Acute ‘flaring of atopic dermatitis

### Delayed symptoms (2-72hrs) ➔ Refer to secondary care only if symptoms severe

#### Gut (Range of symptoms & severity)

- ‘Colic’ / excessive crying
- ‘Reflux’ - GORD
- Blood in stool and/or mucus in otherwise well child
- Vomiting in irritable child with back arching & screaming
- Feed refusal or aversion
- Diarrhoea: often protracted + propensity to faltering growth
- Constipation: straining with defecation but producing soft stools, irregular or uncomfortable stools +/- faltering growth
- Unwell child: delayed onset protracted D&V

*Wide range of severity, from well child with bloody stool to shocked child after profuse D&V (FPIES)*

#### Skin (Range of symptoms & severity)

- Significant to severe atopic dermatitis +/- faltering growth

#### Respiratory (Usually with other symptoms)

- ‘Catarrhal’ airway symptoms

#### Systemic

- Red/itchy eyes
- Blocked/runny nose, sneezing
- Cough, wheeze, breathlessness
- Drowsiness, dizziness, pallor, collapse
- Anaphylaxis

**Red Flags (urgent referral to secondary care):**

- Faltering growth
- Severe atopic dermatitis
- FPIES, Anaphylaxis, collapse
Breastfeeding is the optimal way to feed a baby with CMPA, with, if required, individualised maternal elimination of all cow’s milk protein foods (+ Calcium and vitamin D supplementation).

For more detailed directions to diagnose and manage CMA, use the ‘Managing Allergy in Primary care’ (MAP) guidelines (developed by a team of specialists in the field of paediatric milk allergy but published by Nutricia).

- CMPA commonly appear when a formula is introduced in a usually breastfed baby. Therefore returning to exclusive breastfeeding should be discussed and encouraged at the earliest opportunity.
- In the UK, 2-3% of 1-3-year olds have confirmed CMPA (the highest prevalence in Europe).
- Only about 10% of babies with CMPA will require an AAF (Murano et al., 2014). The remainder should tolerate an EHF.
- 10-14% of infant with CMPA will also react to soya proteins (and up to 50% of those with non-IgE mediated CMPA). But because of better palatability soya formula is worth considering in babies>6months.

### Hypoallergenic Infant Formulae

### Extensively Hydrolysed Formulae (EHF) Indication: Mild to moderate symptoms/reactions (IgE or non IgE mediated allergies)

<table>
<thead>
<tr>
<th>Product</th>
<th>Calcium RNI (525mg/d) met in:</th>
<th>Lactose</th>
<th>Tin size</th>
<th>Cost per tin</th>
<th>Cost per 100Kcal</th>
<th>Average requirement / 28d**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Similac Alimentum*</td>
<td>740mls</td>
<td>no</td>
<td>400g</td>
<td>£9.10</td>
<td>£0.43</td>
<td>0-6months: 7-12 tins</td>
</tr>
<tr>
<td>SMA Althéra</td>
<td>800mls</td>
<td>yes</td>
<td>450g</td>
<td>£10.68</td>
<td>£0.47</td>
<td>0-6months: 7-12 tins</td>
</tr>
<tr>
<td>Aptamil Pepti 1*</td>
<td>1120mls</td>
<td>yes</td>
<td>400g</td>
<td>£9.87</td>
<td>£0.50</td>
<td>(800g: 6 tins)</td>
</tr>
<tr>
<td>Nutramigen LGG 1*</td>
<td>680mls</td>
<td>no</td>
<td>400g</td>
<td>£11.21</td>
<td>£0.56</td>
<td>(800g: 6 tins)</td>
</tr>
<tr>
<td>Aptamil Pepti 2*</td>
<td>830mls</td>
<td>yes</td>
<td>800g</td>
<td>£18.82</td>
<td>£0.50</td>
<td>7-12 tins (800g: 6 tins)</td>
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<tr>
<td>Nutramigen LGG 2*</td>
<td>600mls</td>
<td>no</td>
<td>400g</td>
<td>£11.21</td>
<td>£0.58</td>
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NB: Instruction for making up Nutramigen LGG includes the use of cold water, which goes against current DoH guidelines.

### Amino Acid formulae (AAF) Indication: Severe symptoms / reactions to breastmilk (IgE or non IgE mediated allergies) and if EHF tried initially but still experiencing symptoms

<table>
<thead>
<tr>
<th>Product</th>
<th>Calcium RNI (525mg/d) met in:</th>
<th>Lactose</th>
<th>Tin size</th>
<th>Cost per tin</th>
<th>Cost per 100Kcal</th>
<th>Average requirement / 28d**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alfamino</td>
<td>920mls</td>
<td>no</td>
<td>400g</td>
<td>£23.81</td>
<td>£1.18</td>
<td>7-12 tins</td>
</tr>
<tr>
<td>Nutramigen Puramino*</td>
<td>820mls</td>
<td>no</td>
<td>400g</td>
<td>£27.63</td>
<td>£1.38</td>
<td>7-12 tins</td>
</tr>
<tr>
<td>Neocate LCP® or Syneo</td>
<td>800mls</td>
<td>no</td>
<td>400g</td>
<td>£29.56</td>
<td>£1.56</td>
<td></td>
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</tbody>
</table>

NB: Instruction for making up Neocate Syneo includes the use of cold water, which goes against current DoH guidelines.

**Neocate Spoon®** is a weaning convenience product usually for children with severe multiple allergies.

**Neocate Junior®** is not suitable for the under 1 and will not automatically be needed.

These should only be prescribed under the supervision of a Paediatric Dietitian or Paediatrician with a clear rationale.

### Soy formula

**Indication:** CMPA in infants over 6 months of age, not reacting to soya

<table>
<thead>
<tr>
<th>Product</th>
<th>Tin size</th>
<th>Cost per tin</th>
<th>Cost for ≤6months</th>
<th>Not for prescribing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wysoy®</td>
<td>860g</td>
<td>£10.54</td>
<td>£0.24</td>
<td>Not for prescribing</td>
</tr>
</tbody>
</table>

**Top Tips**

- **EHF and AAF have an unpleasant taste and smell,** which is better tolerated by younger babies. Unless there is anaphylaxis, advise to introduce the new formula **gradually** by mixing with the usual formula in increasing quantities until the transition is complete. Serving in a closed cup or bottle or with a straw (depending on age) may improve tolerance.
- **Warn parents** that it is quite common for babies to develop green stools on these formulae.
- **Prescribe only 2 tins initially** until compliance/tolerance is established. Only then give additional prescription.
Review and discontinuation of treatment (and challenge with cow’s milk)

60-75% of children outgrow CMPA by 2 years of age, rising to 85-90% of children at 3 years of age (EuroPrevall study, 2012).

- **Trial of reintroduction of cow’s milk** – Use the Milk Ladder (see appendix D). This should be supervised by a suitably trained health professional if symptoms are severe.

- **Review prescriptions regularly** to check that the formula is appropriate for the child’s age.

- **Quantities of formula** required will change with age – see guide to quantities required. Refer to the most recent correspondence from the Paediatric Dietitian, or contact your local paediatric dietetic department for clarification.

- **Prescriptions can be stopped** when the child has outgrown the allergy, or on advice of the Dietitian/Paediatrician.

- **Review the need for the prescription if:**
  - The patient is over 2 years of age
  - The formula been prescribed for more than 1 year
  - The patient is prescribed more than the suggested formula quantities according to their age/weight
  - The patient is able to drink cow’s milk or eats yoghurts/cheese

- **Children with multiple and/or severe allergies or faltering growth may require prescriptions beyond 2 years.** This should always be on the advice of the Paediatric Dietitian.

Useful resources for parents and health professionals

- **Breastfeeding**
  For breastfeeding and bottle feeding advice, visit the UNICEF baby friendly pages: [www.unicef.org.uk/BabyFriendly/](http://www.unicef.org.uk/BabyFriendly/)
  [http://www.nhs.uk/start4life](http://www.nhs.uk/start4life)

- **Local Breastfeeding Support Services**
  [www.southernhealth.nhs.uk/services/childrens-services/breastfeeding-service/](http://www.southernhealth.nhs.uk/services/childrens-services/breastfeeding-service/)

- **Cow’s Milk Protein Allergy**
  CMPA Support ([www.cmpasupport.org.uk](http://www.cmpasupport.org.uk))

- **For Health Professionals**
  Managing Allergy in Primary care: [https://www.allergyuk.org/health-professionals/mapguideline](https://www.allergyuk.org/health-professionals/mapguideline)
  [NICE Clinical Guideline 116 Food Allergy in Children and Young People. 2011](http://www.nice.org.uk)
  Luyt et al. British Society for Allergy and Clinical Immunology (BSCACI) guideline for the diagnosis and management of cow’s milk allergy, July 2014 [www.bsaci.org](http://www.bsaci.org)