

# Cow's Milk Protein Allergy (CMPA)

- Common; 2-7.5% prevalence under 1yr of age, (0.5% in exclusively breastfed)
- Delayed diagnosis
- More common than intolerance, which tends to be later onset
- Over-diagnosis has huge impact, especially on breastfeeding mother
- Breastfeeding is the best outcome

# First line management of Symptoms

**Reflux**

**Constipation**

**Colic**

**Diarrhoea**

**Eczema**

# Cow's Milk Protein Allergy (CMPA)

See IMAP below

- IgE mediated; refer for allergy assessment
  - Exclude dairy and move to extensively hydrolysed formula first
  - continue normal maternal diet unless clear reaction to breast milk
  - If severe allergy; move to amino acid formula and if exclusive breastfeeding exclude CMP from maternal diet, with supplements of Ca and Vit D
- 
- Non-IgE mediated
  - Severe; urgently refer to Paediatrician and dietician and treat as above
  - Mild to Moderate; refer to dietician and see below

# What if only eczema?

Both iMAP and NICE guide say "one or more symptoms" so;

- If bottle fed and <6 months with moderate or severe uncontrolled eczema by topical steroids, test for allergy by exclusion whilst awaiting dermatology assessment
- If exclusively breastfed, explain that it is not known if maternal dietary exclusion will help, if allergy is likely consider trial of exclusion, with maternal supplements of Ca and Vit D, remember that maternal dietary CMP may reduce long term allergy in infant
- See Tower Hamlets Eczema guideline for children

# Mild to Moderate CMPA, non IgE mediated

## Start exclusion diet

Fully breastfed; exclude CMP from maternal diet

Mixed or bottle fed, continue if breastfeeding (no maternal diet change), change formula to extensively hydrolysed, if at 2 weeks no improvement, change to amino acid feed

Review at 4 weeks;  
Symptoms should resolve in 2-4 weeks

No improvement; likely not CMPA,  
consider referral if diagnostic uncertainty

Improvement; Home Challenge test;  
restart CMP for 1 week and review  
Symptoms return?

No

Not CMPA, review as necessary

Yes

CMPA confirmed, code

Exclude CMP for 6 months or until 9 months of age  
Then plan challenge, see below

Before weaning;

# Home Reintroduction

## Breastfed

Maternal consumption of all milk products (milk, yogurts, cheese) over one week

## Formula fed

Gradual introduction over one week

**Day 1:** 30ml/1oz of cow's milk formula to hypoallergenic formula

**Day 2:** 60ml/2oz to the first bottle and so on until Day 7

# Breastfeeding Mothers Non IgE CMA

1

**Identify risk factors and symptoms**

- C-section
- Eczema
- Mucus stools
- Feed refusal & reflux
- Family history

2

**Refer to iMAP guidelines**

Refer to iMAP presentation and treatment algorithms.

3

**Provide advice**

- Breastfeeding support
- Return to exclusive breastfeeding if symptoms only with formula
- Cow's milk protein exclusion for 2-4 weeks
- Calcium & vitamin D supplement
- Refer to dietitian
- Highlight importance of milk-reintroduction challenge to confirm/disprove diagnosis

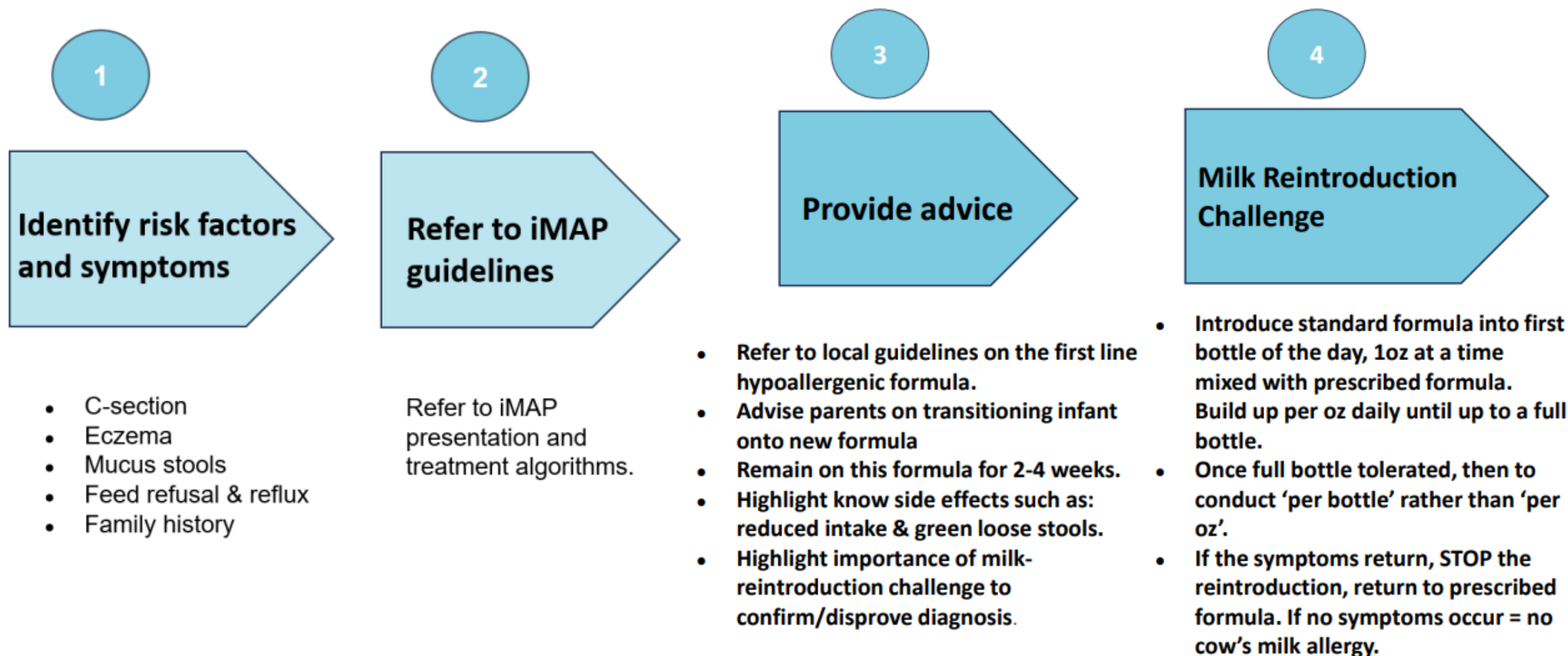
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**Milk Reintroduction Challenge**

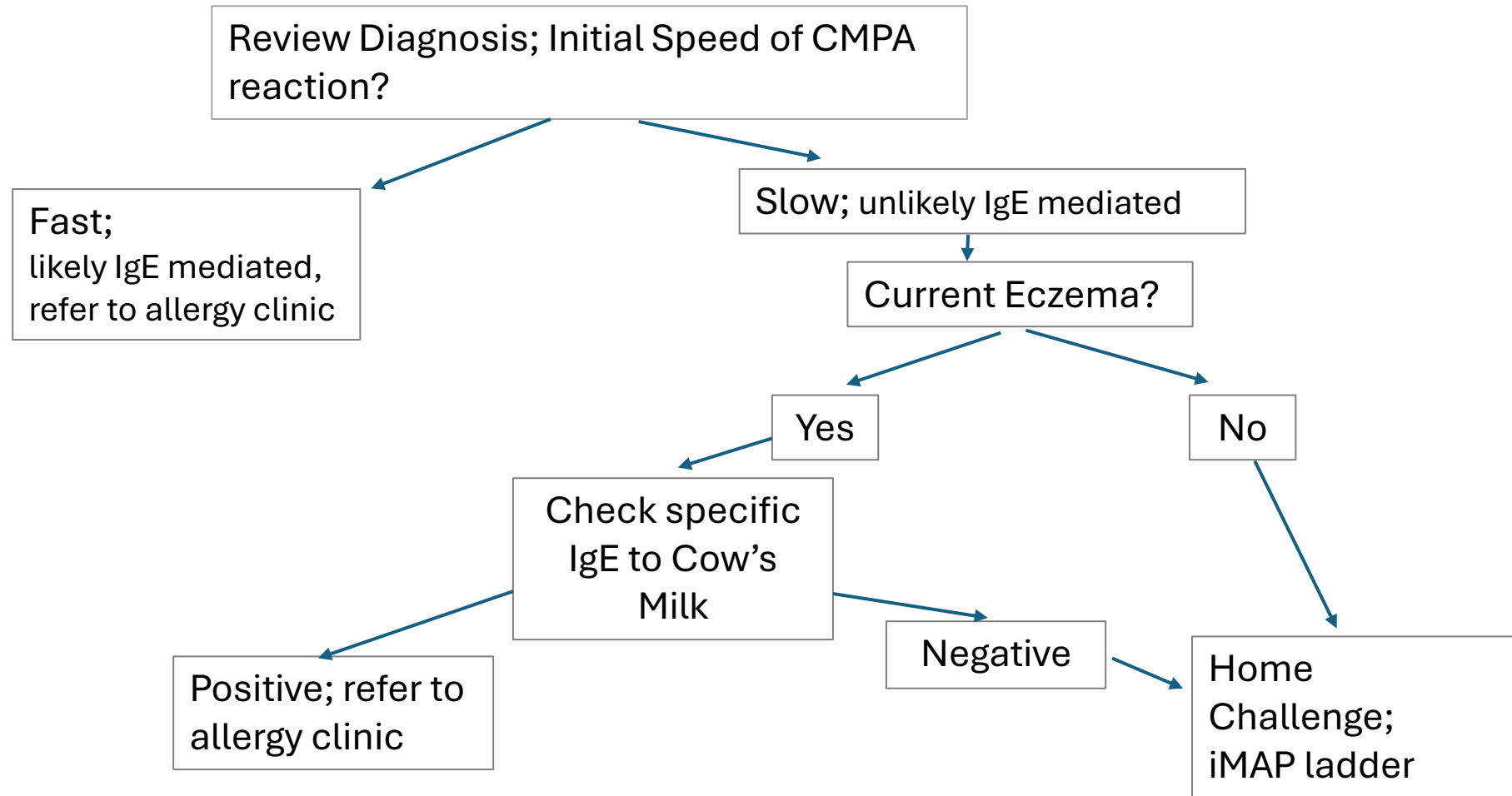
Mother to reintroduce cow's milk protein into diet over a 1 week period. If the symptoms return, STOP the reintroduction, return to full milk exclusion diet. If no symptoms occur = no cow's milk allergy.

# What is the Infant if formula fed? Non IgE CMA

The first 2 steps remain the same but advice and reintroduction are slightly different.



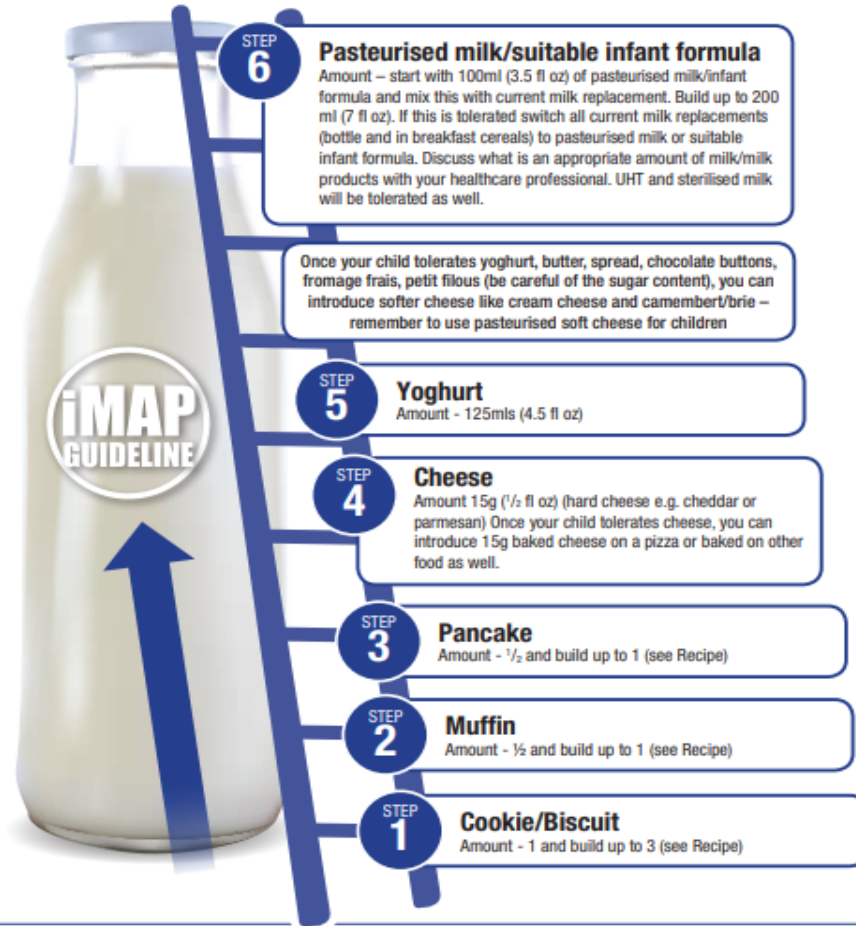
# Should you do a Cow's Milk Protein Challenge at Home?



Non-IgE CMA  
When symptom free for 6  
months  
From 12 months, or with  
weaning;

# THE iMAP MILK LADDER

To be used only in children with Mild to Moderate Non-IgE Cow's Milk Allergy  
Under the supervision of a healthcare professional  
PLEASE SEE THE ACCOMPANYING RECIPE INFORMATION



## AT EACH OF THE FOLLOWING STEPS

### Cookie, muffin, pancake, cheese and yoghurt

It may be advisable in some cases to start with a 1/4 or a 1/2 of that particular food and then over a few days to gradually build up to a whole portion - Please ask your healthcare professional for guidance on this

THE LOWER STEPS ARE DESIGNED TO BE USED WITH HOME MADE RECIPES. THIS IS TO ENSURE THAT EACH STEP HAS THE APPROPRIATE MILK INTAKE. THE RECIPES WILL BE PROVIDED BY YOUR HEALTHCARE PROFESSIONAL  
Should you wish to consider locally available store-bought alternatives - seek the advice of your healthcare professional Re: availability

October 2016

[CLICK HERE TO DOWNLOAD A COPY](#)

Having taken an Allergy-focused Clinical History and Physically Examined

Less than 2% of UK infants have CMA. There is a risk of overdiagnosis of CMA if mild, transient or isolated symptoms are over-interpreted or if milk exclusion diets are not followed up by diagnostic milk reintroduction. Such situations must be avoided. There should be increased suspicion of CMA in infants with multiple, persistent, severe or treatment-resistant symptoms. iMAP primarily guides on early recognition of CMA, emphasizing the need for confirmation of the diagnosis, either by allergy testing (IgE) or exclusion then reintroduction of dietary cow's milk (non IgE). Breast milk is the ideal nutrition for infants with CMA and any decision to initiate a diagnostic elimination diet trial must include measures to ensure that breastfeeding is actively supported. Refer to accompanying leaflet for details of supporting ongoing breastfeeding in milk allergic infant. Firststepsnutrition.org is a useful information source on formula composition.

### Mild to Moderate Non-IgE-mediated CMA

Mostly 2-72 hrs. after ingestion of  
Cow's Milk Protein (CMP)

Usually formula fed, at onset of formula feeding.  
Rarely in exclusively breast fed infants

Usually several of these symptoms will be present. Symptoms persisting despite first line measures are more likely to be allergy related e.g. to atopic dermatitis or reflux. Visit [gpfn.org.uk](http://gpfn.org.uk) for advice about other infant feeding issues.

#### Gastrointestinal

Persistent Irritability - 'Colic'  
Vomiting - 'Reflux' - GORD  
Food refusal or aversion  
Diarrhoea-like stools – abnormally loose +/- more frequent  
Constipation – especially soft stools, with excess straining  
Abdominal discomfort, painful flatus  
Blood and/or mucus in stools in otherwise well infant

#### Skin

Pruritus (itching), Erythema (flushing)  
Non-specific rashes  
Moderate persistent atopic dermatitis

The symptoms above are very common in otherwise well infants or those with other diagnoses, so clinical judgement is required. Trial exclusion diets must only be considered if history & examination strongly suggests CMA, especially in exclusively breastfed infants, where measures to support continued breastfeeding must be taken.

### Cow's Milk Free Diet Exclusively breast feeding mother\*

Trial exclusion of all Cow's Milk Protein from her own diet and to take daily Calcium and Vit D

#### Formula fed or 'Mixed Feeding'

If mother unable to revert to fully breastfeeding, trial of Extensively Hydrolysed Formula - eHF

See Management Algorithm

### Severe Non-IgE-mediated CMA

Mostly 2-72 hrs. after ingestion of  
Cow's Milk Protein (CMP)

Usually formula fed, at onset of mixed feeding.  
Rarely in exclusively breast fed infants

One but usually more of these severe, persisting & treatment resistant symptoms:

#### Gastrointestinal

Diarrhoea, vomiting, abdominal pain, food refusal or food aversion, significant blood and/or mucus in stools, irregular or uncomfortable stools  
+/- Faltering growth

#### Skin

Severe atopic dermatitis +/- Faltering Growth

### Cow's Milk Free Diet Exclusively breast feeding mother\*

If symptomatic, trial exclusion of all Cow's Milk Protein from her own diet and to take daily Calcium & Vit D

#### Formula fed or 'Mixed Feeding'

If mother unable to revert to fully breastfeeding, trial of replacement of Cow's Milk formula with Amino Acid Formula (AAF). If infant asymptomatic on breast feeding alone, do not exclude cow's milk from maternal diet.

Ensure:

Urgent referral to local paediatric allergy service  
Urgent dietetic referral

### Severe IgE CMA

#### ANAPHYLAXIS

Immediate reaction with severe respiratory and/or CVS signs and symptoms.  
(Rarely a severe gastrointestinal presentation)

Emergency Treatment and Admission

### Mild to Moderate IgE-mediated CMA

Mostly within minutes (may be up to 2 hours) after ingestion of Cow's Milk Protein (CMP)  
Mostly occurs in formula fed or at onset of mixed feeding

One or more of these symptoms:

Skin – one or more usually present

Acute pruritus, erythema, urticaria, angioedema  
Acute 'flaring' of persisting atopic dermatitis

#### Gastrointestinal

Vomiting, diarrhoea, abdominal pain/colic

Respiratory – rarely in isolation of other symptoms

Acute rhinitis and/or conjunctivitis

### Cow's Milk Free Diet

Support continued breast feeding where possible.

If infant symptomatic on breast feeding alone, trial exclusion of all Cow's Milk Protein from maternal diet with daily maternal Calcium & Vit D as per local guidance.  
If infant asymptomatic on breast feeding alone, do not exclude cow's milk from maternal diet.

#### Formula fed or 'Mixed Feeding'

If mother unable to revert to fully breast feeding  
1st Choice - Trial of Extensively Hydrolysed Formula – eHF  
Infant soy formula may be used over 6 months of age if not sensitised on IgE testing

If diagnosis confirmed (by IgE testing or a Supervised Challenge in a minority of cases):

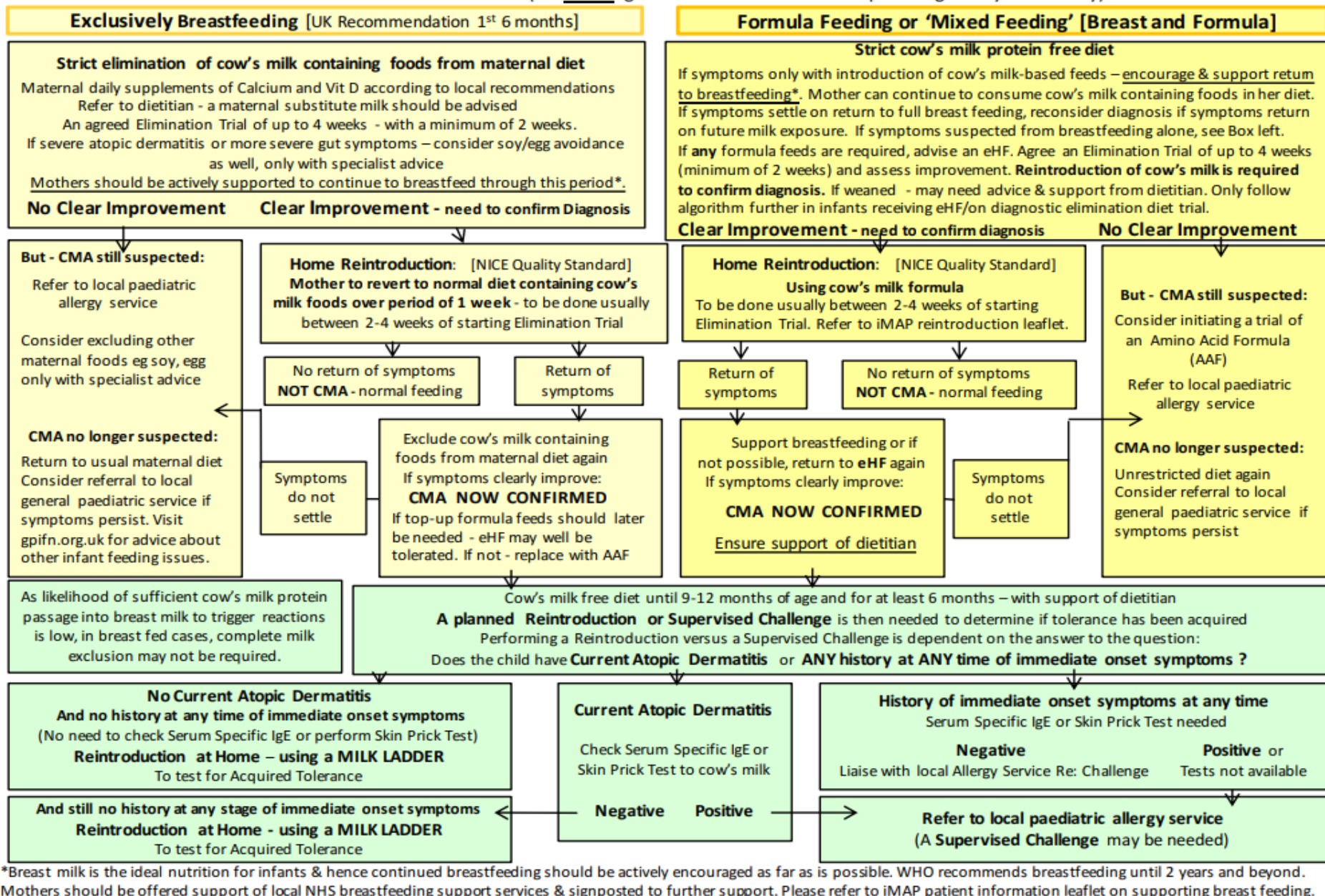
Follow-up with serial IgE testing and later Planned Challenge to test for acquired tolerance

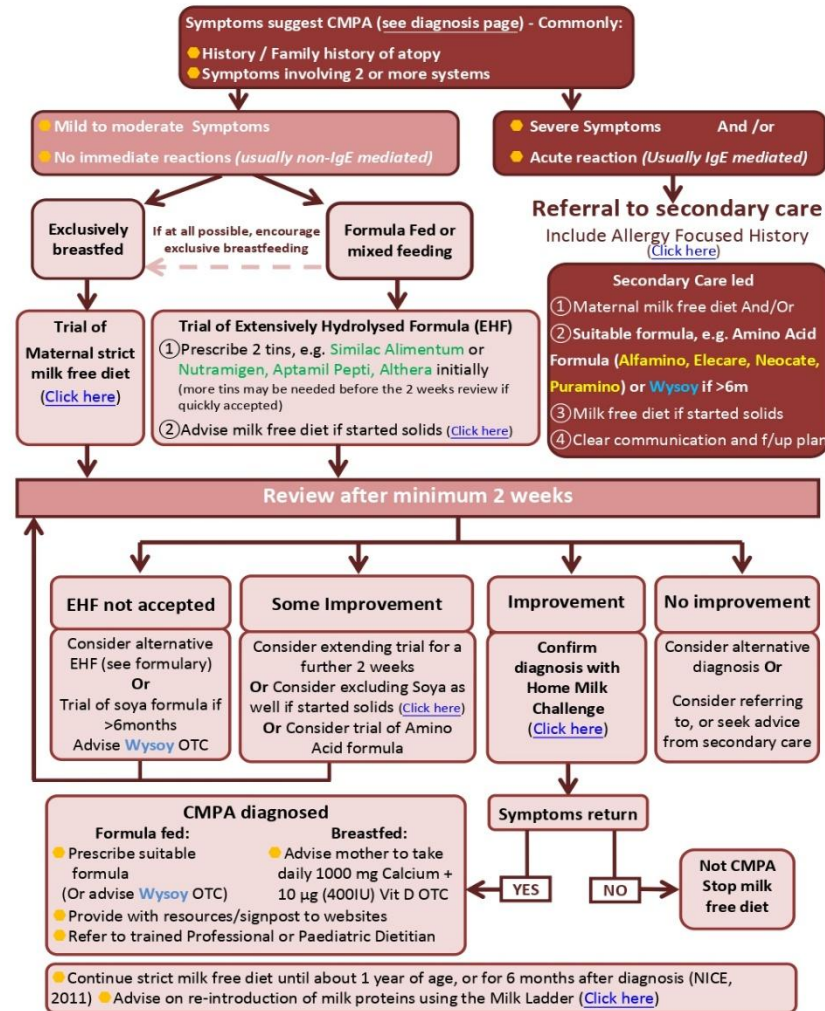
Dietetic referral required

UK NICE Guidance - If competencies to arrange and interpret testing are not in place - early referral to local paediatric allergy service advised

\* Actively support continued breastfeeding (see over)

iMAP was developed without any funding or support from industry but note that authors do make declarations of interest.





[Click here](#) for additional guidance

# Introducing Other Foods to a Baby with non IgE CMA

Important note - Deliberate exclusion or delayed introduction may increase risk of food allergy.



## Checklist

Infant is established on first foods (veg, fruits, starchy and protein foods). Baby is well and any eczema is well controlled



## Allergenic Foods

- Egg
- Peanuts & Nuts
- Wheat
- Soya
- Crustaceans & Molluscs
- Fish
- Sesame



## Time of Day

Introduce early on in the day



## Quantity

Start with introducing  $\frac{1}{4}$  -  $\frac{1}{2}$  tsp initially and then increase over a few days



## Building Up

Once successfully introduced to keep in diet 1-2x per week.

# Appropriate Prescribing of Infant Formulas

**Breast feeding is the best outcome**








Formula	Standard formula Whole, intact protein	Comfort formula Partially hydrolysed	Extensively hydrolysed formula (EHF)	Amino acid formula (AAF)
Availability	Purchased from supermarkets or pharmacies <b>Not to be prescribed.</b>	Purchased from supermarkets or pharmacies. <b>Not to be prescribed.</b>	Prescription only	Prescription only
When to use	All infants without allergy. Not suitable for CMA.	Marketed for infants with colic or constipation- note <b>limited evidence</b> . Not suitable for CMA.	First line formula when CMA is suspected. Tolerated by 90% of infants with proven CMA .	If infant is presenting with severe symptoms of CMA, or has symptoms persist on EHF.
Notes	Frequent changes in formula is not recommended.		Bitter in taste. Side effects include: reduced intake, green, loose stools, worsening of reflux.	

# List of prescribable EHF and AAFs

**Breast feeding is the best outcome**

Extensively Hydrolysed Formulas (ehf)

Image	Formula	First Line in Primary Care
	Alimentum (Abbot)	N/a
	<b>Althera (Nestle) – (Halal and vegetarian)</b>	<b>Yes*</b>
	Aptamil Pepti 1 & 2 (Nutricia)	No
	Nutramigen LGG 1 & 2 (Reckitt)	No
	Aptamil Pepti Syneo (Nutricia)	No

\* Always check your local CCG prescribing guidance and availability of any products at the time of prescribing

Amino Acid (AA) Formulas

NOT TO BE ROUTINELY STARTED IN PRIMARY CARE

Image	Formula
	<b>Alfamino (Nestle)</b> <b>utramigen Puramino (Reckitt)</b>
	<b>Nutramigen Puramino (Reckitt)</b>
	<del>Elecare (Abbot)</del>
	<b>Neocate LCP (Nutricia)</b>
	<b>Neocate Syneo (Nutricia)</b>
	<b>Neocate Junior (Nutricia)</b>

\* If a patient presents with clear anaphylactic reaction to cow's milk and requires formula these AAF should be commenced in primary care, with immediate onward referral to secondary or specialist care. Those **in bold** would be suitable only in these circumstances.

# CMA Background



Breast milk or prescribed  
hypoallergenic formula  
only



Milk-free alternatives can be  
used on foods, cereals and within  
meal preparations



Most babies with CMA can  
move from prescribed  
hypoallergenic formula to an  
alternative milk

## Suitable alternatives and examples \*

**Soya:** Calcium fortified soya milk is an excellent alternative to cow's milk if tolerated. Alpro do a soya growing up milk which has added iodine, iron & adequate protein and calories

**Oat:** Oatly Barista, Oatly full fat and Alpro Growing up oat drink have added calcium, iodine & adequate protein and calories

**Pea:** Mighty Pea milk has added calcium and iodine, adequate protein but low calories. Or, Sproud unsweetened pea milk has adequate protein, calcium and adequate calories but no iodine.

**Coconut:** Koko dairy free super drink is the only suitable alternative which has added iodine, iron, adequate protein & calories

**Nut based milks** e.g. almond milk, hazelnut milk are not suitable as a drink after 12 months due to their very low energy content. However they can be used in food to expose babies to different nuts.

Rice milk not suitable until 4.5 years due to inorganic arsenic levels

# CMPA resources

- Local prescribing guide for formulas; link
- <https://www.selondonics.org/wp-content/uploads/Guide-1-Hypoallergenic-formulas-and-volume-guide-2023-update.pdf>
- <https://gpifn.org.uk/imap/>
- summary for parents; [https://gpifn.files.wordpress.com/2019/10/imap\\_patient\\_factsheet\\_original.pdf](https://gpifn.files.wordpress.com/2019/10/imap_patient_factsheet_original.pdf)
- [https://gpifn.files.wordpress.com/2019/10/imap\\_final\\_ladder-may\\_2017\\_original.pdf](https://gpifn.files.wordpress.com/2019/10/imap_final_ladder-may_2017_original.pdf)