

# Cow's Milk Protein Allergy (CMPA) Diagnosis and Management in Infants

This guidance has been developed by Paediatricians from GWH, RUH and SFT, and Paediatric Dietitians from GWH in conjunction with the NHS Wiltshire CCG Medicines Management Team.

The guidance is designed to be used by all health care professionals involved in the care of infants and young children with suspected Cow's Milk Protein Allergy.

It includes further information on:

- Differentiation between IgE and non-IgE allergy
- Distinction between lactose intolerance and CMPA
- Assessment and diagnosis of CMPA
- Ongoing management of CMPA
- Different types of formula milk
- Prescribing guide for quantities of formula
- Patient information leaflets (Appendices)
  - Milk free diet
  - Milk challenge to confirm diagnosis
  - Milk Ladder

Please refer patients to the Paediatric Dietitians (non-urgent) for any further advice.

Salisbury (SFT) : 01722 429333

Swindon (GWH) : 01793 605149

Bath (RUH) : 01225 824398

# Cow's Milk Protein Allergy (CMPA) Diagnosis and Management in Infants

Developed in conjunction with Paediatricians and Dietitians from RUH, GWH and SFT

## Background Information

- Milk allergy is common in infants although in the majority it will resolve with age.
- The symptoms of milk allergy can be non-specific.
- Accurate assessment is important to allow prompt relief of symptoms for those affected but also to avoid over-diagnosis leading to unnecessary exclusion diets.

## Non-IgE mediated allergy (delayed):

- The majority of infants with milk allergy have 'non-IgE' milk allergy.
- Non-IgE milk allergy is also termed 'delayed onset' or type 2 allergy.
- Sometimes referred to as milk intolerance although this term can include other non-allergic symptoms from milk.
- Symptoms occur between 2 - 48 hours or longer
- Symptoms are thought to occur due to T-cell activation and localised antibodies in the gut or other tissues. There are no accurate laboratory tests available for clinical use to diagnose non-IgE allergy.

## IgE mediated allergy (immediate):

- A smaller group of infants have IgE-mediated ('acute onset'/type 1 allergy).
- Symptoms within minutes to 2 hours

## Differentiation

- There is overlap between the symptoms of non-IgE and IgE related milk allergy but an 'allergy focused history' can help to distinguish the two groups (see [NICE guidance CG116](#) for further information)
- **Differentiation of the two groups is important as management is different**

## Other Information

- Goat's milk, sheep's milk etc have similar proteins to cow's milk so all need to be excluded at least initially. Some infants will be sensitised to the small quantities of cow's milk proteins which get into breast milk from maternal diets
- **Milk allergy is due to an immune reaction to milk protein, not a reaction to lactose which is the main sugar in milk**

## Lactose Intolerance

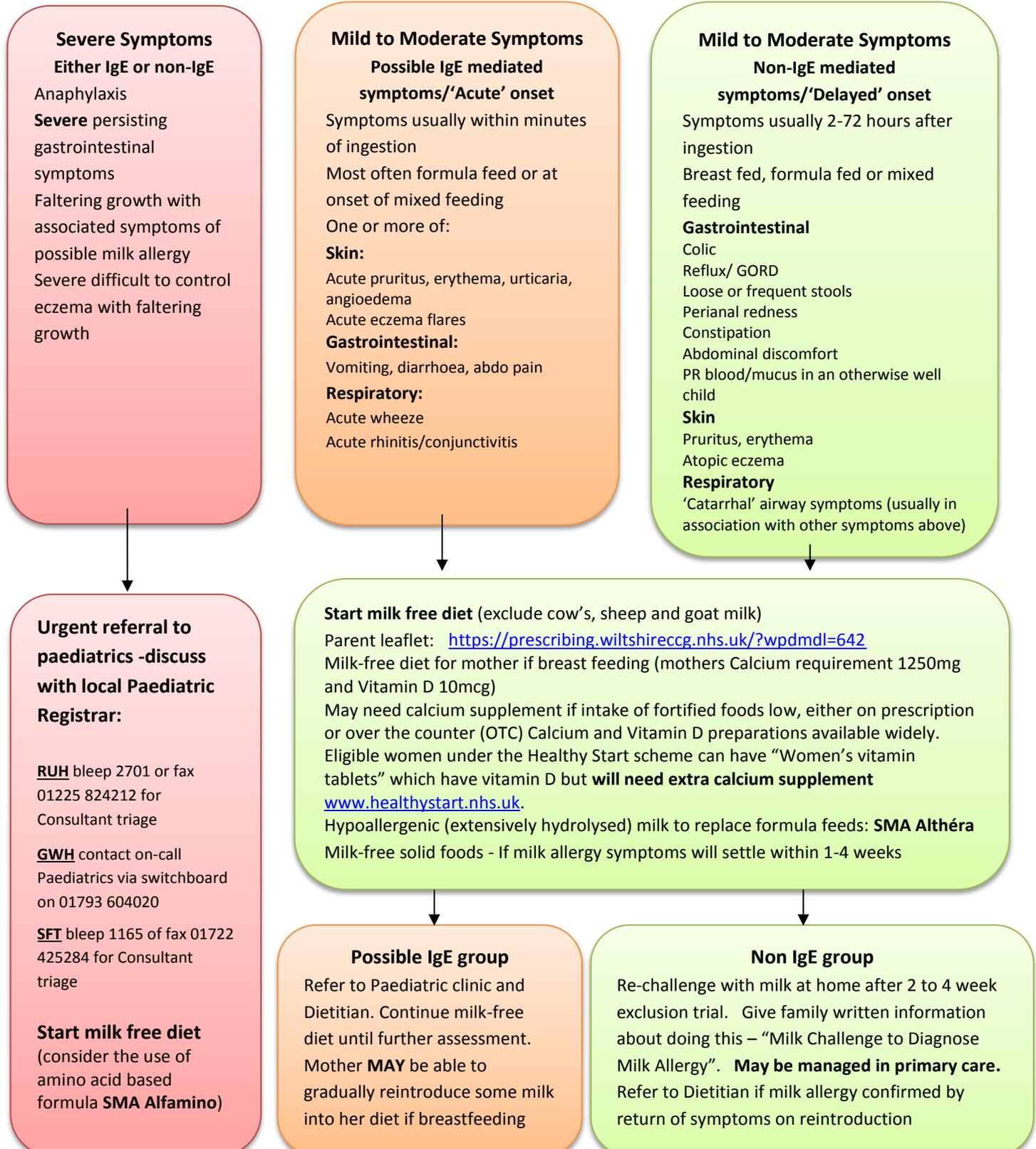
- Relatively uncommon in infants except as a temporary problem after gastroenteritis; it does not cause rashes, eczema etc.
- Caused by a deficiency of the enzyme 'lactase' which digests the milk sugar element of milk, and is NOT an allergy
- Lactose free formulae therefore do **not** have a role in the management of children requiring a cow's milk protein free diet
- Lactose free formula products can be bought at a similar cost to standard infant formula and should NOT be supplied on FP10 prescription. Most pharmacies can order supplies for next day delivery
- There is separate guidance available (can be used throughout Wiltshire)
- [http://www.ruh-bath.nhs.uk/For\\_Clinicians/clinical\\_guidelines/documents/paediatrics/Lactose\\_intolerance\\_in\\_children.pdf](http://www.ruh-bath.nhs.uk/For_Clinicians/clinical_guidelines/documents/paediatrics/Lactose_intolerance_in_children.pdf)

## Principles of Assessment and Management

- History and examination to assess severity and determine if any features of acute Type 1 (IgE mediated allergy)
- Commence a milk free diet
- Skin prick tests or serum specific IgE are important in the assessment of possible IgE mediated symptoms
- For those with delayed non-IgE mediated symptoms without acute IgE mediated symptoms reintroduce milk into diet after a short (2-4 week) exclusion trial
- **There is no validated test for non-IgE mediated milk allergy except exclusion diet followed by a reintroduction challenge.**
- Those with severe symptoms and those with possible IgE mediated allergy require referral to paediatrics and dietetics for further assessment.

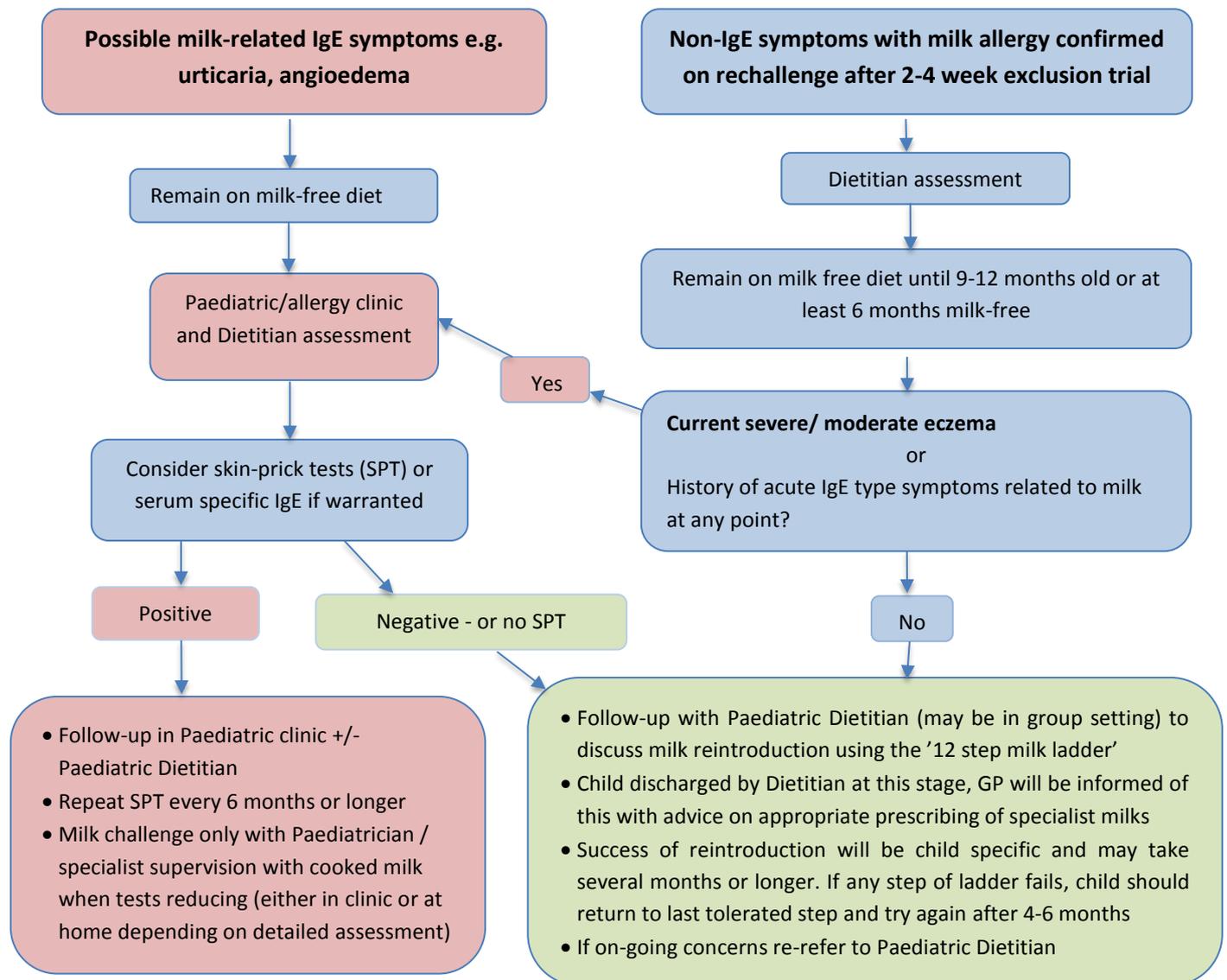
## Initial Assessment of Suspected Cow's Milk Allergy in Infants

- From the history put into one of the three groups below



If no improvement in symptoms when milk excluded consider other diagnoses. If milk allergy still highly suspected consider a trial of amino acid formula eg **SMA Alfamino**

## On-going Management of Milk Allergy



### Note on Soya Products:

- Cautious introduction of soya in weaning months
- If tolerated, change to soya milk from approx. 12 months of age (as infant formula or Alpro Growing Up milk 1+<sup>®</sup>).
- 'Adult' soy milks can be used in small amounts for cooking etc. provided it is fortified with Calcium
- If also soya allergic will need to continue hypoallergenic milk (eHF or AAF) **until 2 years old** Paediatric Dietitian will advise if it can be stopped sooner.

### Patient Leaflets

For more information about milk free diets, re-challenge procedures for those with non-IgE symptoms, and reintroduction of milk as tolerance develops please see the allergy information patient leaflet below on the Medicines Manage:

- **Milk Free Diet - Parent Information** <https://prescribing.wiltshireccg.nhs.uk/?wpdmdl=642>
- **Milk Challenge to Diagnose Milk Allergy** <https://prescribing.wiltshireccg.nhs.uk/?wpdmdl=643>
- **Milk Ladder** <https://prescribing.wiltshireccg.nhs.uk/?wpdmdl=644>
- **FAISG Cow's Milk Free Diet for Infants and Children** <https://prescribing.wiltshireccg.nhs.uk/?wpdmdl=645>

## Types of Infant Formula and Milks

### Hypoallergenic Infant Milks

- An extensively hydrolysed formula (eHF) will be appropriate for the majority of cow's milk allergic infants. In eHF the cow's milk protein has been broken down into small peptides
- Inform the family that these milks have an unusual smell and taste but that most babies will tolerate them. There is no significant difference in taste tolerance between the various brands
- If there is any difficulty getting the baby to take the eHF try the following
  - 1) breast fed infants requiring top-ups eHF can be initially mixed with expressed breast milk
  - 2) For those with non-IgE symptoms the eHF can be mixed with the infant's normal formula until the baby is used to it
- If the first eHF prescribed is refused ask for dietitian advice or try an alternative eHF

### First-line hypoallergenic milk = SMA Althéra® (Nestle Health Science) from birth

- Alternative brands available:
  - **Nutramigen LIPIL® 1 (from birth) or 2 (from 6 months)**
  - **Aptamil Pepti®\*** (Milupa) '1' from birth, '2' from 6 months\*
  - **Similac Alimentum®** (Abbott Nutrition) from birth
- (\* All the whey based extensively hydrolysed formulas on UK market contain lactose; this is not clinically important for most infants unless have significant enteropathy)
- Hypoallergenic milks where the fats are also altered eg. Cow & Gate Pepti-Junior® and Mead Johnson Pregestimil® are aimed at gastrointestinal disorders such as short gut where there is also fat malabsorption so are not usually first line for cow's milk allergy where fat absorption is not a problem

### First-line Amino Acid-based Formula (AAF)- SMA Alfamino® (Nestle Health Science) from birth

- A small number of infants will need an amino acid based formula (elemental formula) but this should usually be prescribed on the advice of a Paediatric Dietitian or Consultant Paediatrician
- A very small proportion of those who are milk allergic will still have significant symptoms on extensively hydrolysed formula (eHF) and so a trial of an amino acid based formula may be advised. **AAF are more expensive than eHF**
- AAF can be considered first line for those who have had anaphylaxis to milk or who have significant enteropathy eg. persistent watery diarrhoea and faltering growth. They are sometimes recommended if top-up feeds are needed if the baby was getting significant symptoms related to maternal milk intake when breast fed
- Alternative brands available:
  - **Neocate LCP®** (Nutricia) from birth to one year or **Neocate Active®** (Nutricia) for over one year (can continue with LCP in most cases)
    - (Neocate Advance® is a specialist milk for children over one year who are not having significant amounts of solid foods)
  - **Nutramigen PURAMINO®** (Mead Johnson) from birth

### Other milks:

- **Soya based infant formulae - Soya formula should NOT be prescribed it is available commercially**
  - not used first line for babies under 6 months as there is a high chance of cross reactivity in that age group
  - theoretical concerns about phytate levels which may reduce nutrient absorption in very young babies and about phytoestrogen levels in the soya milk
  - can be used in babies over 6 months if extensively hydrolysed milk (eHF) is refused by the baby
- **Sheep and goat's milk**, including infant formula based on these milks contain similar proteins to cow's milk and should also be excluded. They are sometimes tolerated relatively early during the reintroduction phase when the allergy is improving or by some children with mild symptoms eg. eczema
- **Lactose free formula** (eg SMA lactose free®, Enfamil LF®) is not suitable for treatment of symptoms of milk allergy as the protein is unaltered (see separate guideline on lactose intolerance in childhood). **Lactose Free Formula should NOT be prescribed it is available commercially.**
- **Oat milk, nut milks, coconut based milks** etc should not be used as a main milk drink for under 2 year olds as their protein and vitamin content is not high enough. They can be used in small amounts in cooking etc.
- **Rice milk** is not advised for under 5 year olds (due to arsenic levels which may theoretically increase future cancer risk)

## Guidelines for quantity of infant formula required on prescription

**To introduce a specialist formulas only prescribe 3 x 400g/450g tins as a trial in case there are tolerance issues.**

Age	Average infant formula intake /24 hours	Total average amount per 24 hr	Cans per month required
0-2 months	90ml -120ml (3-4floz) x 6-8 feeds	630ml (21oz)-780ml (26floz)	8 x 400g/ 450g tins 4 x 900g tin
3-4 months	180ml (6floz) x 5 feeds	900ml (30floz)	11 x 400g/ 450g tins 5 x 900g tin
5-6 months	210ml (7floz) x 5 feeds	1050ml (35floz)	12 x 400g/ 450g tins 6 x 900g tin
7-11 months	210ml (7floz) x 3 feeds	630ml (21floz)	8 x 400g/ 450g tins 3 x 900g tins
From 12 months – 2 years*		300ml (10floz)	4 x 400g/450g tins 2 x 900g tins

**\*Only prescribe for those on cow's milk and soya free diets**

**Prescriptions should not be issued for children over the age of 2 years.**

Parents should be informed their prescription will be discontinued and it can be explained that there are now a wide range of milk and soya free milk alternatives available, such as: oat, nut, and coconut based milks. In most case they are highly fortified with calcium (120mg per 100ml) apart from the "organic" products. **Rice milk should NOT be used in children under 5.**

If taste is a problem, then parents can add small amount to the prescribed formula and introduce the taste slowly or make use of milk shake powders provided dental hygiene advice is followed. If a child takes their prescribed milk from a bottle then this is the perfect opportunity to stop this habit.

Nationally it is advised that all children under five are given a vitamin supplement to provide vitamins A, C and D if they are breast fed or drinking less than 500ml formula per day. These can be purchased by the parent unless they are entitled to Healthy Start vitamins (<http://www.healthystart.nhs.uk>).

**For further advice contact your local Paediatric Dietitian (non-urgent)**

Salisbury (SFT) : 01722 429333

Swindon (GWH) : 01793 605149

Bath (RUH) : 01225 824398