

## **Milk allergy: diagnosis and management in infants**

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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:** 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. It is sometimes referred to as milk intolerance although this term can include other non-allergic symptoms from milk. 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:** A smaller group of infants have IgE-mediated ('acute onset'/type 1 allergy). 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.

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.

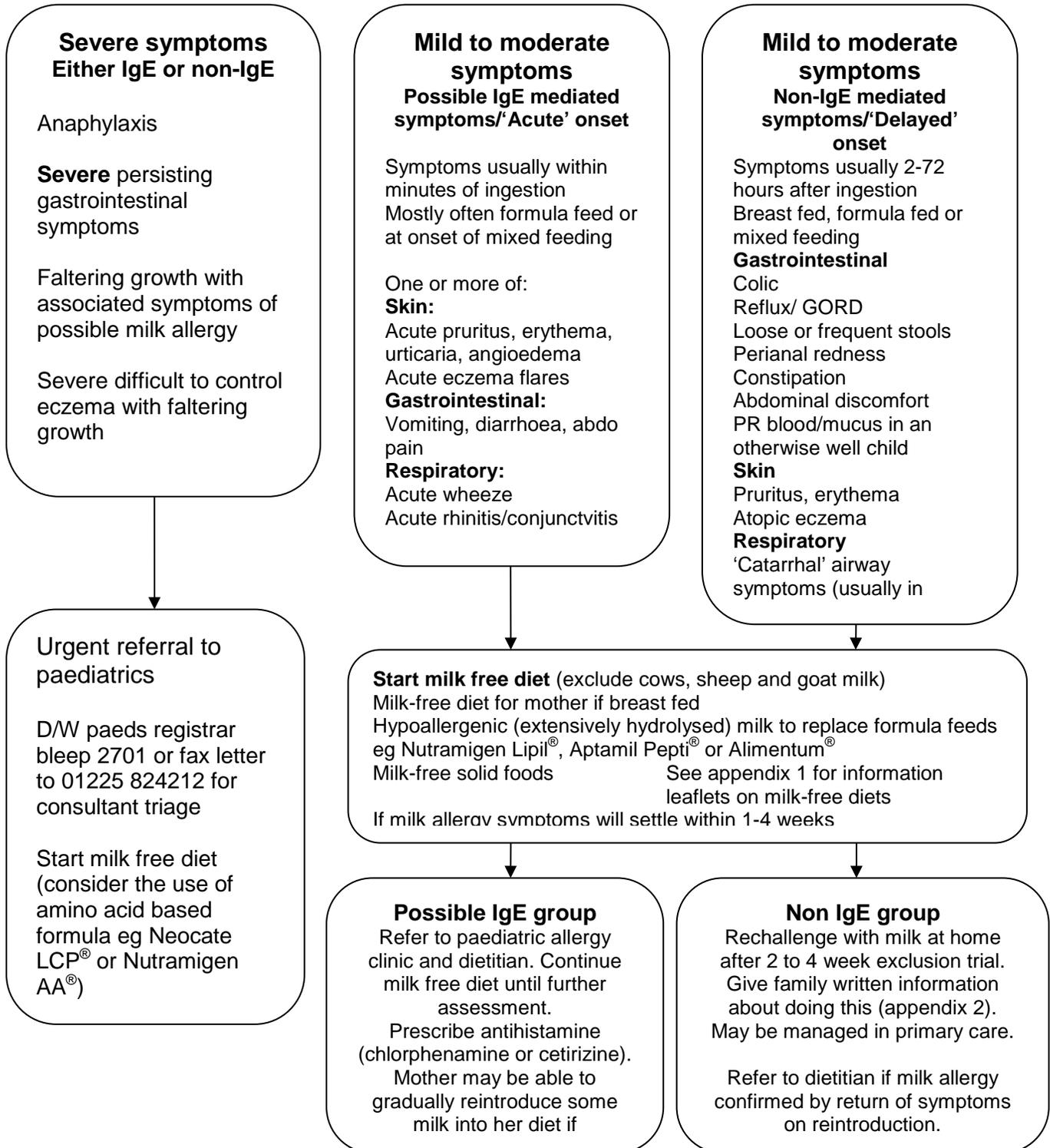
Milk allergy is due to an immune reaction to milk protein, not a reaction to lactose which is the main sugar in milk. Lactose intolerance is relatively uncommon in infants except as a temporary problem after gastroenteritis; it does not cause rashes, eczema etc. (please see separate RUH guidance: 'Lactose intolerance in childhood')

### **Principles of assessment and management**

1. History and examination to assess severity and determine if any features of acute Type 1 (IgE mediated allergy)
2. Commence a milk free diet.
3. Skin prick tests or serum specific IgE are important in the assessment of possible IgE mediated symptoms.
4. 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.
5. There is no validated test for non-IgE mediated milk allergy except exclusion diet followed by a reintroduction challenge.
6. Those with severe symptoms and those with possible IgE mediated allergy require referral to paediatrics and dietetics for further assessment.

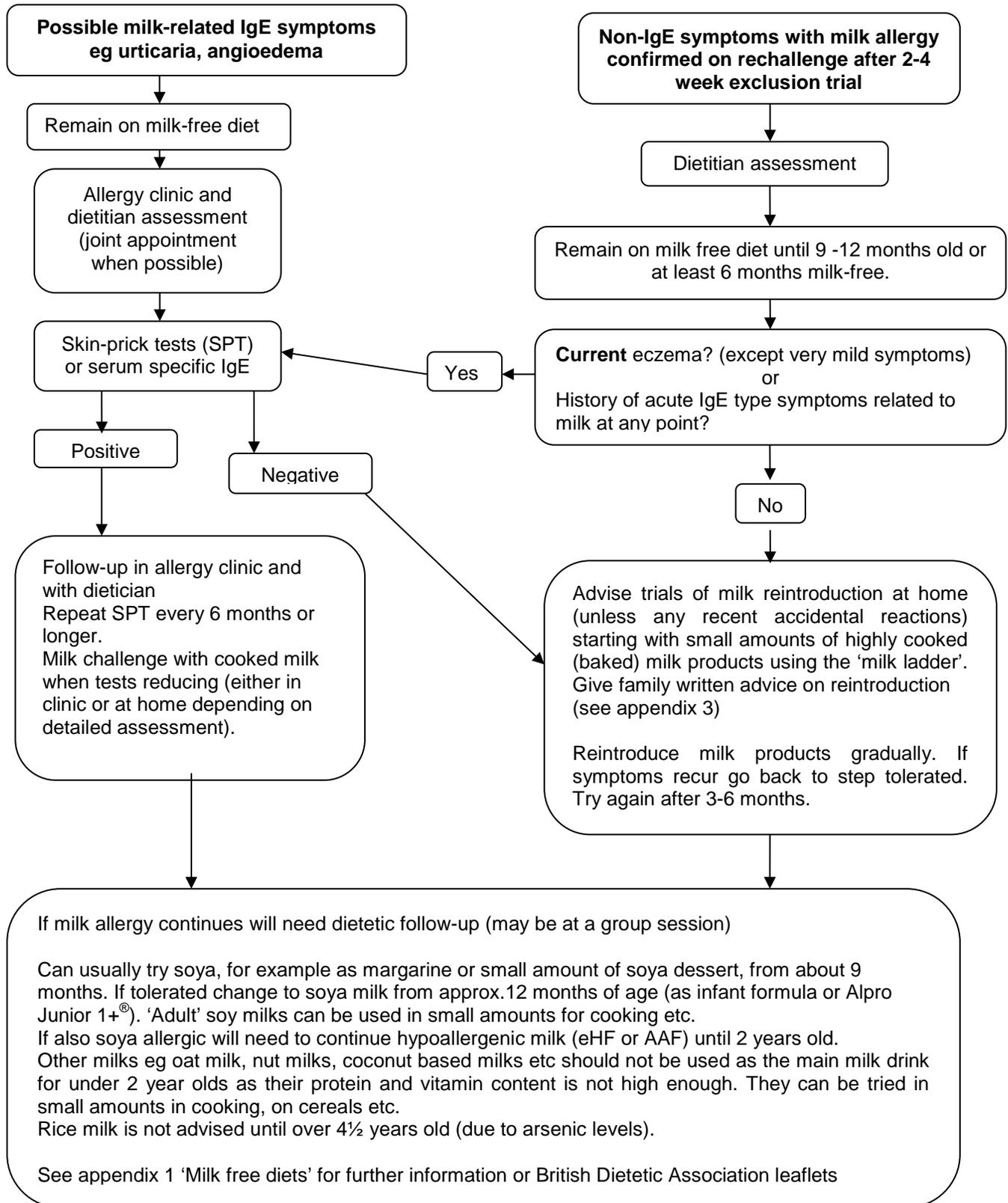
## Initial assessment of suspected cow's milk allergy in infants

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 Neocate LCP® or Nutramigen AA®

## On-going management of milk allergy



## Hypoallergenic infant milks – further information

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 - brands of eHF currently available in UK:

**Nutramigen LIPIL**<sup>®</sup> (Mead Johnson) '1' from birth onwards, '2' from 6 months

**Aptamil Pepti**<sup>®</sup> (Milupa) '1' from birth onwards, '2' from 6 months\*

**Similac Alimentum**<sup>®</sup> (Abbott Nutrition) from birth onwards

Althéra Vitaflo<sup>®</sup> currently requires an additional calcium supplement so is not recommended as first line\*

\* 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<sup>®</sup> and Mead Johnson Pregestimil<sup>®</sup> 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.

### Amino acid-based Formula (AAF)

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.

### Amino-acid based formulae currently on UK market are:

**Neocate LCP** (Nutricia) from birth to one year

**Neocate active**<sup>®</sup> (Nutricia) for over one year (Neocate advance<sup>®</sup> is for children over one year who are not having significant amounts of solid foods)

**Nutramigen AA**<sup>®</sup> (Mead Johnson) for birth onwards

### Other milks:

Soya based infant formulae are not used first line for babies under 6 months as there is a high chance of cross reactivity in that age group. There have also been theoretical concerns about phytate levels which may reduce nutrient absorption in very young babies and about phytoestrogen levels in the soya milk. They can be used in babies over 6 months if extensively hydrolysed milk (eHF) is refused by the baby.

Sheep and goats 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<sup>®</sup>, Enfamil LF<sup>®</sup>) is not suitable for treatment of symptoms of milk allergy as the protein is unaltered (see separate guideline on lactose intolerance in childhood)

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 until over 4½ years old (due to arsenic levels which may theoretically increase future cancer risk).

**For more information about milk free diets, rechallenge procedures for those with non-IgE symptoms, and reintroduction of milk as tolerance develops please see the allergy information leaflets (Appendix 1, 2 & 3)**

## References

Diagnosis and management of non-IgE-mediated cow's milk allergy in infancy - a UK primary care practical guide. Carina Venter, Trevor Brown, Neil Shah, Joanne Walsh and Adam T Fox. Clinical and Translational Allergy 2013, 3:23 <http://www.ctajournal.com/content/3/1/23>

BNF for Children 2013-2014

NICE guidance CG116 Food allergy in children and Young People February 2011 <http://www.nice.org.uk/cg116>