

Clinical Guideline

MILK RELATED PROBLEMS IN CHILDREN

SETTING	Primary and Secondary Care
FOR STAFF	GPs, Practice Nurses, Health Visitors, School Nurses, Secondary Care Paediatricians
PATIENTS	Children

Key points:

- Immediate Type 1 reactions occur within minutes to one hour, are IgE-mediated, and comprise acute urticaria, vomiting and breathing difficulties. This is dealt with in the (separate) [Food Allergy guideline](#)
- This document deals with the other two common milk-related problems – Non-IgE mediated Cow's Milk Protein Allergy and Lactose intolerance.

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Definitions

It is important to differentiate between an immediate type 1 IgE and Type 4 non-IgE allergic reactions to milk.

Immediate type 1 reactions are IgE mediated, occur within minutes to one hour, and usually comprise acute urticaria, vomiting and breathing difficulties. (see separate guideline – ['Food Allergy Management in Children'](#))

This guideline deals with two main types of milk related problems in children.

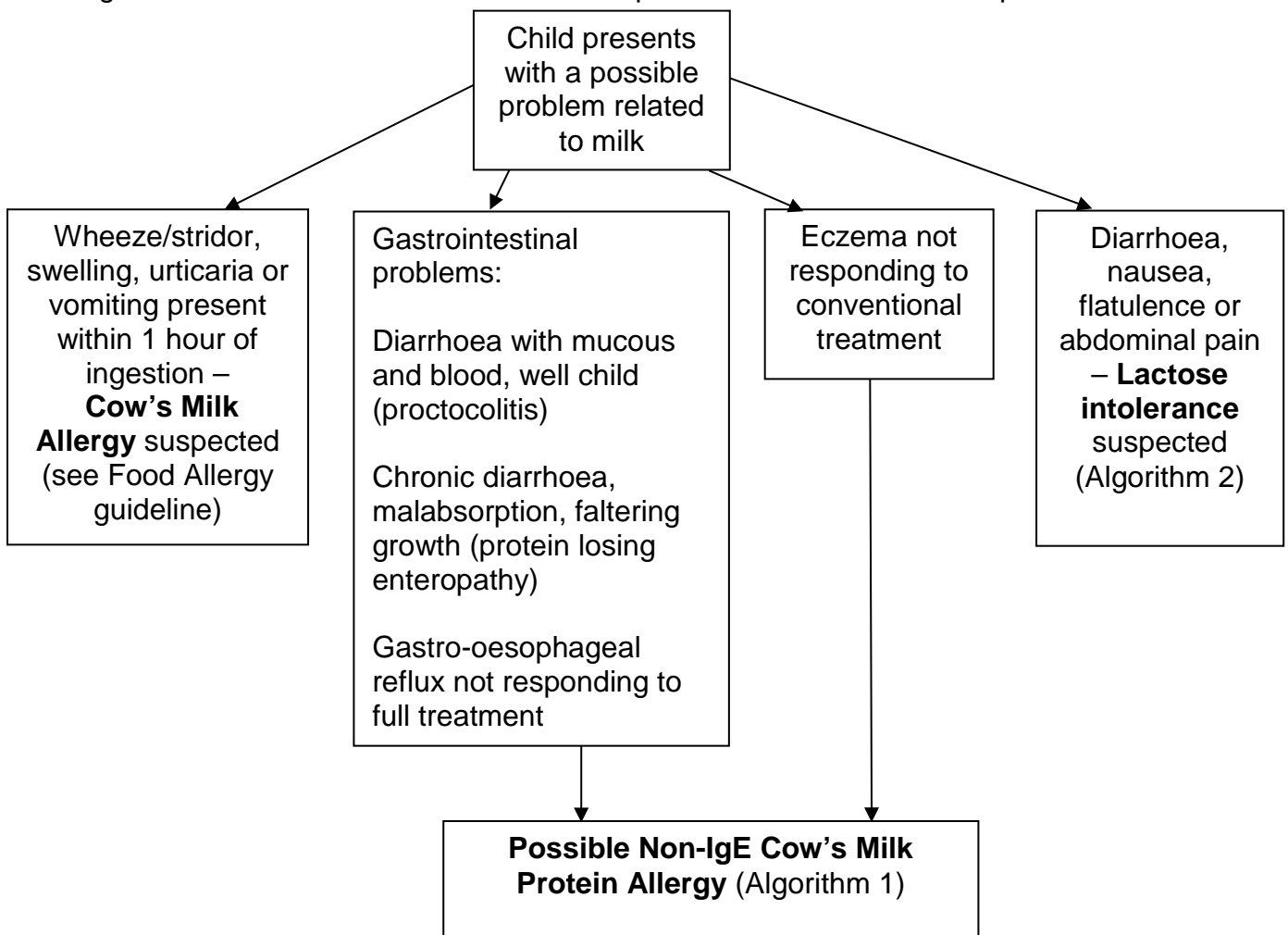
1) Non- IgE mediated Cow’s Milk Protein Allergy

This is due to a delayed, non-IgE mediated hypersensitivity to protein in cow’s milk. Presentation varies, but usually involves the skin and the gastrointestinal (GI) system.

2) Lactose intolerance

This is caused by a temporary or permanent deficiency of the enzyme lactase, which is present in the small bowel. This will result in the inability to digest lactose found in mammalian milk, and in other dairy products. It may be seen transiently following gastroenteritis. Variable amounts of lactose containing food may be tolerated. If tolerance is exceeded, the child may experience flatulence, diarrhoea and abdominal pain but lactose intolerance is not associated with rashes, vomiting or other non-lower GI symptoms.

The algorithm below outlines the differences in presentation of milk related problems.



Cow’s Milk Protein Allergy – Background Information

Epidemiology

- Cow’s milk protein allergy (CMPA) affects 2-3% of children, including 0.5% of purely breast fed infants, as cow’s milk protein from the mother’s diet may be present in breast milk¹

- 50% of milk allergy is immediate IgE mediated Type 1 hypersensitivity ([See Food Allergy guideline](#))
- 50% are delayed onset non- IgE mediated. These usually involve the skin and gastro-intestinal system.

Clinical Features of non-IgE mediated cow's milk protein allergy

- Reproducible temporal association between symptoms and ingestion of milk
- Several body systems may be involved, mainly skin and gastro-intestinal
- Co-existing atopy or family history of atopy is common

Common presentations in infancy

- Atopic Dermatitis – moderate to severe disease which is not controlled on optimum treatment *may* be due to non-IgE mediated CMPA, especially if other food allergy or faltering growth is present.
- There is a clear overlap between Gastro-oesophageal reflux (GOR) and CMPA. A trial of cow's milk elimination should be considered if there are other features of atopy or if failure to respond to full anti-reflux treatment.
- Other GI symptoms e.g diarrhoea with mucous and rectal bleeding (procto-colitis).
- Protein losing enteropathy (chronic diarrhoea, malabsorption, faltering growth) is less common and requires urgent referral to a General Paediatrician.

Investigations

If there is any uncertainty about whether the child has IgE or non-IgE mediated cow's milk allergy, consider allergen specific IgE (RAST) test to cow's milk protein.

Management

- Consider referral to paediatrician +/- paediatric dermatologist if there are specific dermatological concerns.
- Diagnosis is usually made if complete cow's milk exclusion significantly improves symptoms.
- Eczema: [NICE](#) states that bottle fed infants under 6 months with moderate or severe atopic eczema which is not controlled by optimum standard therapy should be prescribed extensively hydrolysed formula (EHF) for 6-8 weeks². If breast fed, the mother can be advised to exclude all dairy from her diet. Consider referral to a dietitian if required.
- Other presentations – prescribe EHF for infants less than 6 months if bottle fed, or exclude dairy from mother's diet if breast fed.
- If symptoms improve and cow's milk exclusion is to continue, the child should see a dietitian to ensure their diet remains nutritionally complete, and for support surrounding re-challenge.
- Referral to a dietitian should be made promptly, so that the child can be seen in a timely manner.

Prognosis

60-75% of children achieve cow's milk tolerance by 2 years of age, 84-87% by 3 years of age.

Non-IgE Mediated Cow's Milk Protein Allergy (Algorithm 1)

(For advice on special formula milks see Appendix)

Box 1 - CMP exclusion

Under 6 months

Continue breastfeeding but mother to start strict dairy free diet

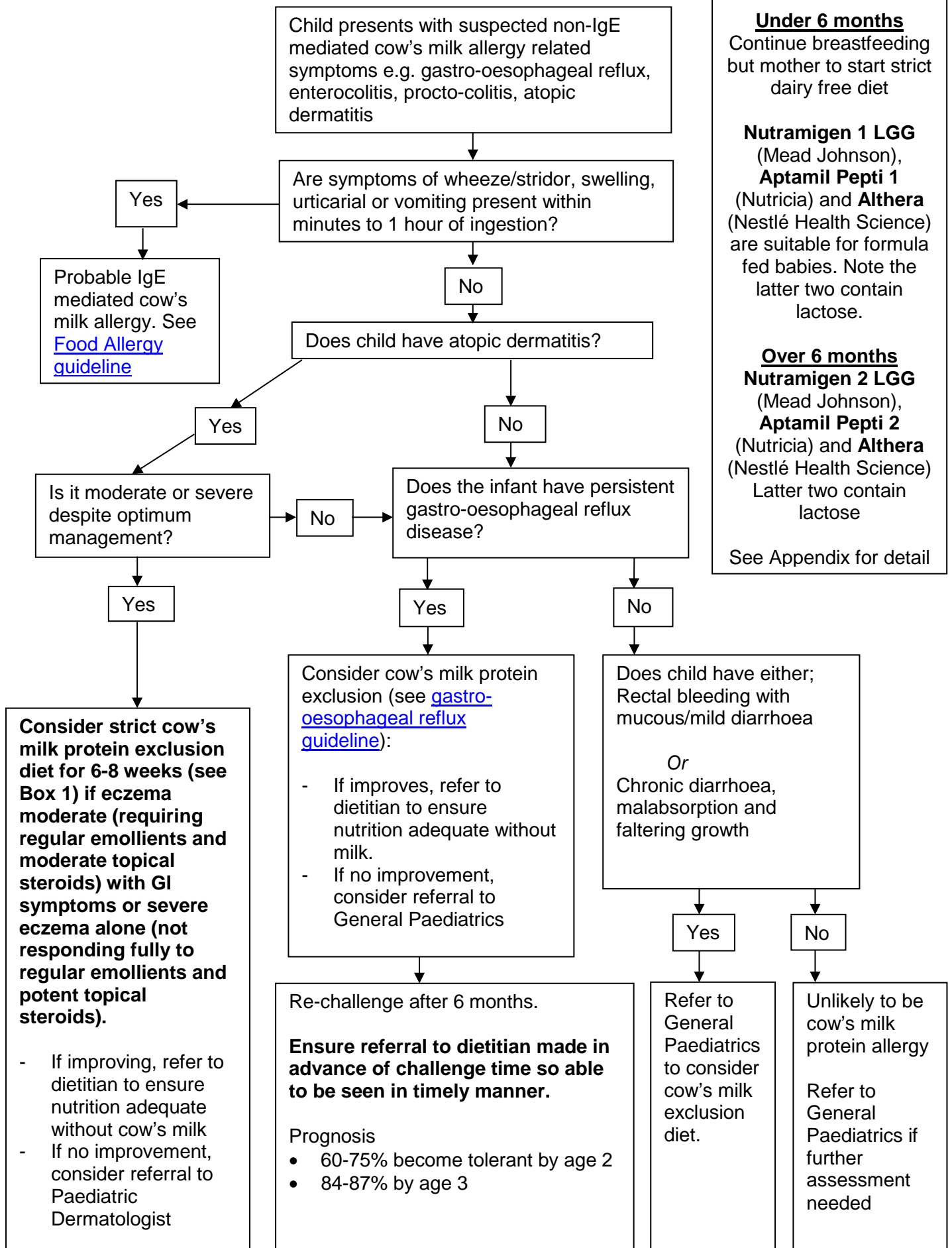
Nutramigen 1 LGG

(Mead Johnson),
Aptamil Pepti 1
(Nutricia) and **Althera**
(Nestlé Health Science)
are suitable for formula fed babies. Note the latter two contain lactose.

Over 6 months

Nutramigen 2 LGG
(Mead Johnson),
Aptamil Pepti 2
(Nutricia) and **Althera**
(Nestlé Health Science)
Latter two contain lactose

See Appendix for detail



Lactose Intolerance – Background Information

Definition

A clinical syndrome of one or more of the following, resulting from ingestion of varying amounts of lactose containing food substances:

- Abdominal pain
- Diarrhoea
- Nausea
- Flatulence and/or bloating

Epidemiology

- 2% of Caucasians, 50-80% in Afro-Caribbean population and close to 100% of Asian population are intolerant to lactose
- 20% of Hispanic, Asian and Afro-Caribbean children have evidence of lactase deficiency and lactose malabsorption
- It is unusual to see lactose intolerance before the age of 2-3 years, and other causes of malabsorption should be sought in these presenting children
- Caucasian children tend to develop symptoms after 4 years of age

Clinical Features

Presentation is commonly progressive during adolescence or adulthood. It can also present transiently after acute gastroenteritis. Symptoms include abdominal distension, abdominal cramps and diarrhoea (not vomiting). Patients can often tolerate small amounts of lactose, usually in the form of cheese or yoghurt.

Pathology

Lactase is found on the brush border of the small intestine. There are three types of lactase deficiency.

- 1) Primary lactase deficiency – relative or absolute absence of lactase that develops in childhood at various ages.
- 2) Secondary lactase deficiency results from small bowel injury such as acute gastroenteritis, coeliac disease, cow's milk protein allergy, small bowel overgrowth or chemotherapy. If diarrhoea persists for more than 14 days after an acute gastroenteritis, the WHO recommends a trial of avoidance of lactose containing milks. Lactose can often be reintroduced after two weeks.
- 3) Congenital lactase deficiency is extremely rare and presents as intractable diarrhoea as soon as mammalian milk is introduced.

Diagnosis

- Normally diagnosed clinically and confirmed by a 2 week lactose exclusion trial

Investigations

- Stool microscopy and culture
- If symptoms persist following a 2 week lactose exclusion trial, consider Coeliac antibodies and total IgA, to exclude Coeliac disease

Management

- Lactose free and lactose reduced formula milks for infants are available over the counter and on prescription.
- After 12 months of age, children can have calcium fortified soya or oat milk substitutes, or use lactose free or lactose reduced milk from the supermarket
- **Goat and sheep milk are not free of lactose and are not suitable substitutes.**

- Some lactose intolerant individuals may be able to tolerate small amounts of milk containing foods.
- Yoghurts do still contain some lactose, but much of it will have been fermented therefore patients may find they are able to tolerate some yoghurt.
- Hard cheeses are low in lactose, with mature cheeses having a negligible amount.

Note: Individuals presenting with symptoms following hard cheese ingestion are more likely to have cow's milk protein allergy.

Lactose Intolerance (Algorithm 2)

- Unusual before the age of 2 years³.
- Often secondary and transient following an infectious episode of diarrhoea
- Occurs in only 2% of Caucasian children, but common in Afro-Caribbean and Asian population, increasing during adolescence and adulthood.

Child presents with possible lactose intolerance – abdominal pain, flatulence, diarrhoea without blood

- Assess for other causes, particularly if Caucasian or under 2 years, as lactose intolerance is rare in these groups – consider coeliac screen (include total IgA) and stool culture for bacteriology and virology
- Consider 2 week trial of lactose free diet, if history and symptoms convincing³

Symptoms improve on 2 week trial

- Aged <6 months – continue lactose free diet, re challenge at 6-12 months. Refer to dietitian.
- Age >6 months – re challenge after 4 weeks on a lactose free diet

If symptoms return on re challenge, diagnosis very likely – no need for further investigations. Re-challenge at 12 months.

75% outgrow problem by 12 months.

- Use lactose free or lactose reduced milk (see Box 2).
- Refer to dietitian to advise on nutritional adequacy of diet, especially if <5 years.
- Advise parents to read information on [NHS Choices](#)
- It is safe for patients to consume some milk/cheese/yoghurt, as many can tolerate small amounts

Symptoms do not resolve, or ongoing uncertainty, or other concerning symptoms (e.g faltering growth)

Refer to General Paediatrics

***Box 2**

Milks suitable for lactose intolerance

<1 year

SMA-LF (SMA Ltd)

Aptamil Lactose Free (Nutricia)

Enfamil O-Lac (Mead Johnson)

(all are prescribable if diagnosis confirmed)

>1 year

Alpro Soya 1-3+

Lactofree (whole) (Arla Foods UK)

Older Children

Lactofree (Arla Foods UK)

Calcium fortified Soya or Oat milk

**RELATED
DOCUMENTS**

[Food Allergy Management in Children](#)

QUERIES

Please contact Paediatric Dietitians, 0117 3428802

Appendix 1 – Special formula milks for Cow’s Milk Protein Allergy and Intolerance

Less than 6 months of age

Nutramigen 1 LGG (Mead Johnson), **Aptamil Pepti 1** (Nutricia) and **Althera** (Nestlé Health Science) are suitable. Nutramigen 1 is casein based and contains the probiotic *Lactobacillus rhamnosus GG* which is reported to accelerate tolerance to cow’s milk.

Aptamil Pepti 1 and **Althera** are whey based and contain lactose which make them more palatable but unsuitable for infants with co-existing lactose intolerance.

Over 6 months of age

Nutramigen 2 LLG (Mead Johnson), **Aptamil Pepti 2** (Nutricia) and **Althera** (Nestlé Health Science) are suitable. As above, the latter two are lactose containing.

Some other hydrolysed formula such as **Pepti Junior** (Cow and Gate) and **Pregestimil Lipil** (Mead Johnson) are available but contain much higher levels of medium chain triglyceride (MCT) fats and are less suitable as first line treatment.

It is important to ensure product preparation guidelines are observed, as these may vary from Department of Health guidelines.

Allergic reactions to extensively hydrolysed infant formulae are unusual, but if they occur the infant should be referred to secondary care. In the meantime, an amino acid formula may be prescribed. Suitable amino-acid based formulae are: **Neocate LCP** (Nutricia), **Alfamino** (Nestlé Health Science) and **Puramino** (Mead Johnson). All are free of lactose.

It is suggested in the first instance that a one week supply is prescribed, to ensure the product is tolerated.

Soya based formulae should be avoided under the age of 6 months due to high levels of phytoestrogens. It may be considered in infants over the age of 6 months once weaning has progressed, as the overall phytoestrogen load is decreased. There is an increased risk of soya allergy with cow’s milk allergy therefore this should not be considered as a first line formula.

Age appropriate commercially available soya milk (e.g Alpro 1-3+) may be used as a main milk drink in children over 12 months of age. Milk substitutes based on other grains and legumes, such as oat or almond milk are nutritionally incomplete and should not be used as a main milk drink until 2 years of age. Rice milk should be avoided in children less than 5 years of age following FSA advice regarding arsenic content.

There is no role for alternative mammalian milks as there is a high incidence of cross-reactivity.

Note: The reintroduction of cow’s milk can be done using the [Milk Allergy in Primary Care \(MAP\) Milk Ladder](#). Please note that this is in the process of being updated.

See also:

- [NICE Clinical Guideline 116: Food allergy in under 19s: assessment and diagnosis](#)
- [Diagnostic Approach and Management of Cow’s Milk Protein Allergy in Infants and Children: ESPGHAN Committee Guidelines](#)
- [BSACI Guideline for the diagnosis and management of cow’s milk allergy](#)

References

- 1) Luyt D et al (2014). BSACI Guideline for the diagnosis and management of cow’s milk allergy. *Clin Exp Allergy*; **44**:642-672
- 2) National Institute for Health and Clinical Guidance (NICE) 2007. Atopic eczema in children, CG57.
- 3) Heyman M et al (2006). Lactose intolerance in infants, children and adolescents. *Pediatrics*; **118** (3):1279-1286