

Cow's Milk Protein Allergy (CMPA)

Allergies: What is CMPA?

An allergy is an **immune system response** to substances which are normally classified as harmless. In the case of CMPA, it is a response to one or both of the proteins (casein and whey) found in milk. There are two types of CMPA:

1. Immediate or IgE-mediated allergy
2. Delayed or non IgE-mediated allergy

In infancy, exposure can occur through breastfeeding (via cow's milk protein in the maternal diet), through infant formula based on cow's milk, or when complementary feeding occurs and solids are introduced. Worldwide, CMPA is reported to affect 1.9% to 4.9% of infants and children.¹ Food allergy, in general, is becoming a significant paediatric health issue and one that is expected to increase globally.² In some highly industrialised regions, the prevalence of food allergy in infancy has reached 10%.³

CMPA is a highly complex food allergy which can affect the skin, respiratory and gastrointestinal systems. In worst case scenarios CMPA can lead to admission to Accident and Emergency (A&E) and/or Paediatric Intensive Care Units, due to anaphylaxis, and can potentially lead to death. It is important that those affected by CMPA are diagnosed and managed appropriately. For confirmed CMPA, strict avoidance of cow's milk protein is currently the safest management strategy. Importantly, CMPA should not be confused with lactose intolerance which is caused by an inability to digest the carbohydrate (milk sugar) lactose, rather than the protein in milk.

Diagnosis of CMPA

The first line of contact when CMPA is suspected is normally the GP or health visitor, who will decide to either treat or refer to a specialist paediatrician or dietitian, although severe cases may warrant immediate trips to A&E. The path to gaining a diagnosis of CMPA is not an easy and straightforward one due to the nature of allergy testing (IgE antibodies could be detected but for non-IgE mediated responses negative results will show), which can often be inconclusive. Other tests such as a skin prick test or serum assay may be considered, as may elimination diets and oral challenges. In practice, diagnosis is often delayed as symptoms are so variable in type and severity and they can closely overlap with other more common functional infant feeding problems such as colic and reflux. Those with CMPA should be reviewed every 6-12 months to assess whether they have developed a tolerance to cow's milk protein.^{4,5}

Formula feeds for the management of CMPA are available on prescription and should always be used under medical supervision to ensure that those infants and young children affected by this condition are managed appropriately and continue to be able to meet their individual nutritional needs.

The British Specialist Nutrition Association (BSNA) is the voice of the specialist nutrition industry in the UK. We are a trade association representing manufacturers of high quality foods designed to meet the needs of people with very specific nutrition requirements. BSNA represents manufacturers of products suitable for the management of Cow's Milk Protein Allergy (CMPA), as recommended in the evidence based National Institute for Health and Care Excellence (NICE) Guideline 116 (which covers the assessment and management of food allergy in children and young people under 19), MAP (Milk Allergy in Primary Care) Guidelines and the BSACI (British Society for Allergy and Clinical Immunology) guideline for the diagnosis and management of cow's milk allergy.

[1] Fiocchi A, Brozek J, Schunemann H *et al* (2010) World Allergy Organization (WAO) diagnosis and rationale for action against Cow's milk allergy (DRACMA) guidelines. *World Allergy Organ J* 3(4):57-161 [2] Prescott S, Pawankar R, Allen K *et al* (2013) A global survey of changing patterns of food allergy burden in children [3] Osborne NJ, Koplin JJ, Martin PE, *et al* (2011) Prevalence of challenge-proven IgE-mediated food allergy using population-based sampling and predetermined challenge criteria in infants. *J Allergy Clin Immunol*, 127:668-676. e1-2 [4] National Institute for Health and Care Excellence (NICE). Food allergy in under 19s: assessment and diagnosis. Clinical guideline [CG116] (2011) www.nice.org.uk/guidance/cg116 last accessed: 12 April 2017 [5] The MAP Guideline. <http://cowsmilkallergyguidelines.co.uk/>. Accessed 3 January 2017 [6] Skripak JM, Matsui EC, Mudd K and Wood RA (2007) The natural history of IgE-mediated cow's milk allergy *J Allergy Clin Immunol* 120(5):1172-7 [7] Fiocchi A, Brozek J, Schunemann H *et al* (2010) World Allergy Organization (WAO) Diagnosis and Rationale for Action Against Cow's Milk Allergy (DRACMA) Guidelines *Pediatr Allergy Immunol Suppl* 21:1-25 [8] Venter C, Brown T, Shah N *et al* (2013) Diagnosis and management of non-IgE mediated cow's milk allergy in infancy – a UK primary care practical guide. *Clin Transl Allergy* 3(1):23 [9] National Institute for Health and Care Excellence (NICE) (2015) Cow's Milk Protein Allergy in Children. <https://cks.nice.org.uk/cows-milk-protein-allergy-in-children/#:~:scenari=1>. Accessed on 22 March 2017 [10] Ludman, S., Shah, N. and Fox, A. (2013) Managing cows' milk allergy in children (clinical review). *BMJ* 347, f5424 [11] Baker, G., Meyer, R. and Reeves, L. (2014) *Food fact sheet: suitable milks for children with cow's milk allergy*. The British Diabetic Association. https://www.bda.uk.com/foodfacts/home#medical_conditions [12] Vandenplas, Y, Brueton, M, Dupont, C. *et al.* (2007) Guidelines for the diagnosis and management of cow's milk protein allergy in infants. *Archives of Disease in Childhood* 92(10), 902-908 [13] National Institute for Health and Care Excellence (NICE) (2011) *Food allergy in children and young people. Diagnosis and assessment of food allergy in children and young people in primary care and community settings (full guideline)*. Clinical guideline 116. *National Institute for Health and Care Excellence*. www.nice.org.uk Accessed on: 24 March 2017 [14] Luyt D, Ball H, Makwana N *et al* (2014) BSACI guideline for the diagnosis and management of cow's milk allergy. *Clinical Exp Allergy* 44(5):642-72

Management of Cow's Milk Protein Allergy

Children with CMPA may be managed in either primary, secondary or tertiary care depending on the severity of the symptoms and type of CMPA.^{4,5} It is important that each patient gets good advice and follow up, if necessary. Advice should include information to parents on diet and replacement formulae, nutritional counselling and regular growth monitoring, with follow-up re-evaluations to assess tolerance. It is important that the appropriate information is provided, taking into account socioeconomic status, cultural differences and religion.

Data has indicated that children with food allergy are taking longer to outgrow their allergies, with some children found to be still allergic at four years of age.⁶ For older children, guidelines support the use of specialised formula in order to achieve adequate nutritional intakes.⁷

Infants living with CMPA need to be prescribed a specialist hypoallergenic formula under the supervision of a healthcare professional, following appropriate use of evidence-based MAP guidelines and BSACI guidelines.⁸ NICE CG116 advises that parents should provide their children with hypoallergenic infant formulae, such as extensively hydrolysed formulas or amino acid formulas.⁴ Therefore, specialist infant formula should be prescribed in accordance with medical need and in line with evidence based prescribing guidance and best practice from NICE.

Elimination of cow's milk protein, via an elimination diet, is often the most commonly used approach (for either the child or the breastfeeding mother). Re-introduction is often feasible further down the line.

Milk substitutes in cases of CMPA and caution with alternatives

CMPA can be managed with a prescribed **extensively hydrolysed formula (eHF) or amino-acid based formula (AAF)**, as stated by NICE and MAP Guideline.^{5,9}

Extensively hydrolysed formulas (eHFs) are based on cow's milk which is extensively broken down into smaller peptides that are less well recognised by the immune system¹⁰ and are available either as whey-based or casein-based based formulas. These are tolerated by the majority of infants and children (90%) with CMPA.

Amino acid formulas (AAFs) are an alternative for children who cannot tolerate extensively hydrolysed formulas (eHFs), or those with severe symptoms.¹¹

Soya protein-based formulas are not suitable as first-line products for CMPA management. Under the advice of a healthcare professional, they can be safely used in children over 6 months of age who have no allergy to soya.

Care should be taken when considering other milk substitutes. Children under 4.5 years are not advised to consume rice milk, while ready-made soya, pea, oat, coconut or other milk substitutes should not be used by those under two years of age. Due to an inadequate nutrient profile and the possible risk of allergenic cross-reactivity, milk or infant formulas based on other mammalian milk proteins (including unmodified cow, sheep, buffalo, horse, or goat's milk) should not be recommended in cases of infant CMPA.¹²

Although some CMPA products may not contain lactose, a lactose-free formula from a community pharmacy or supermarket will still contain milk proteins and therefore can potentially lead to a child with CMPA having an anaphylactic reaction. Lactose-free formula should only be recommended for either primary or secondary lactose intolerance and not CMPA.

Apart from soya formula, products suitable for managing CMPA are only available on prescription

Products suitable for the management of CMPA, as recommended in the evidence based NICE CG116,¹³ MAP and BSACI guidelines, should remain available on prescription and used under medical supervision. This will ensure that the individual nutritional needs of infants and young children are managed effectively and appropriately.

Resources:

Allergy UK: <https://www.allergyuk.org/>

CMPA Support:

<http://cowsmilkproteinallergysupport.webs.com/>

NICE Clinical Guideline 116:

<https://www.nice.org.uk/guidance/CG116>

MAP Guideline (Milk Allergy in Primary Care):

<http://cowsmilkallergyguidelines.co.uk/interactive-algorithm/#div3>

The British Society of Allergy and Clinical Immunology (BSACI)¹⁴ www.bsaci.org/resources/index.htm

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