

Combining Quality Care and Cost Saving in Cow's Milk Allergy (CMA) Management

New evidence reveals best practice in first-line dietary management of CMA

A new UK health economics study into CMA management explored the cost-effectiveness of using an extensively hydrolysed casein formula (eHCF) plus the probiotic *Lactobacillus rhamnosus GG* (eHCF with LGG®) compared to an eHCF alone.¹ It was shown that first-line dietary management of newly diagnosed IgE-mediated cow's milk allergy infants with eHCF with LGG® rather than eHCF alone improves patient outcomes, releases healthcare resources for alternate use, reduces NHS costs of patient management and therefore equates to a cost-effective strategy to the NHS.¹

Health economics within the NHS

Trying to find solutions which meet genuine patient needs whilst still making sound financial sense is an increasing concern for health professionals whatever their discipline.²

Applying health economics – which studies efficiency, efficacy and value in the healthcare field – is an increasing speciality which will ultimately help a cash-strapped health service deliver both financial economy whilst also improving patient outcomes and satisfaction. Economic evaluation looks at the resources available, the wants and demands to be met and the choices that have to be made between alternative uses of those resources.²

An important element of this is Medicines Optimisation (MO). This looks at the value which medicines deliver, making sure they are clinically and cost effective.³ The introduction of MO marks a move away from looking at processes and systems (and unit costs of a medicine/product) by focusing on patients and their experiences.⁴

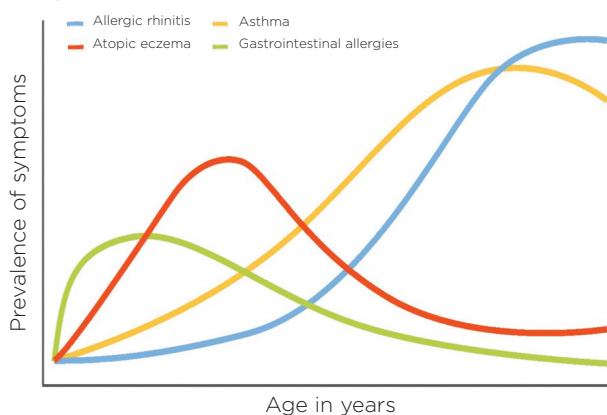
Applying health economics to CMA

The consequences of false economy in CMA management (which focuses solely on cost per tin) are manifold – affecting short-term efficacy and symptom relief as well as longer term issues, such as increased risk of other allergies and a delayed return to cow's milk.

CMA is often the first manifestation of the allergic march,⁵ leading to 2-4 times increased risk of asthma, atopic eczema and respiratory allergies for children with a food allergy compared to those without (see **Figure 1**).⁶

Inevitably, this would lead to an increased demand on allergy resources within the NHS, which spends £1 billion a year to treat and care for all people with asthma: 1 in 11 children and 1 in 12 adults.⁷ Severe eczema places additional financial burden on the NHS costing £1.8 billion a year (2005/6).⁸

Figure 1: Prevalence of Allergic Symptoms in Early Childhood



Adapted from Wahn et al. (1998) and Herz et al. (2005).^{9,10}



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“There is increasing evidence that specific probiotics may play a role in regulating the immune system in children with allergy.^{18, 19, 20}”

Suboptimal CMA management may contribute to a persistent and substantial overspend, with cost leakages occurring along the CMA journey due to excess GP visits and medication use, unnecessary A&E admissions, unneeded referrals to secondary care and inappropriate formula choice. This can lead to a continuation of formula after the infant has outgrown CMA and a delay in the return to milk and inevitably insufficient focus on the allergic future of the child.¹¹

There is a need to reduce these cost leakages and variation in care by adopting an evidence-based protocol for first-line dietary management of CMA.

Establishing the optimal first-line treatment for CMA

Breast milk should always be encouraged, but for formula fed infants these products are normally based on cow's milk. CMA is the most common childhood food allergy affecting 2-7.5% of infants.¹² Symptoms can be immediate (IgE-mediated) or delayed (non IgE-mediated) and can affect the skin, gastrointestinal track and respiratory system and range from mild-to-severe reactions, such as anaphylaxis and failure to thrive.^{13, 14}

Management of CMA involves complete removal of cow's milk from the diet. Clinical guidelines recommend extensively hydrolysed formula (eHF) – based on hydrolysed casein or whey protein – as a first-line treatment for mild-to-moderate CMA (suitable for up to 90% of infants).^{15, 16} Amino acid formula (AAF) should be reserved for severe CMA (up to 10% of infants) as they are considerably more expensive and may delay the development of oral tolerance (return to milk).¹⁷

There is increasing evidence that specific probiotics may play a role in regulating the immune system in children with allergy.^{18, 19, 20} Not all probiotics are the

same, with the clinical benefit dependent on strain specificity. *Lactobacillus rhamnosus* GG (LGG®) is one of the most extensively studied probiotic strains for allergy management. Several studies have found that an extensively hydrolysed casein formula (eHCF) with LGG® resulted in a faster return to milk (oral tolerance acquisition).^{17, 21, 22} After 12 months of dietary management, 79%, 44% and 18% of infants on eHCF with LGG®, eHCF alone and AAF formula respectively were shown to return to cow's milk (see **Figure 2**).¹⁷

Managing CMA with appropriate formula milks may also reduce the incidence of developing longer-term allergic manifestations. A study found that subjects using eHCF with LGG®, compared to eHCF alone, reduced the incidence of 1 or more allergic manifestations by ~50% up to three years of age.²²

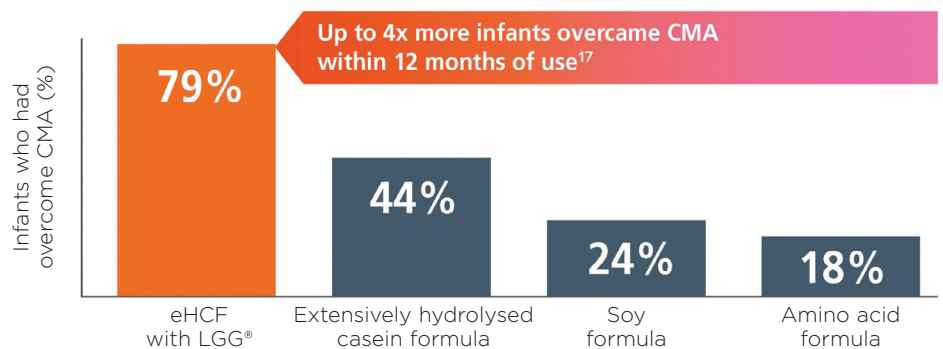
Latest evidence shows that eHCF with LGG® is a cost-effective strategy

The health economics and clinical benefits of using an eHCF with LGG® have been explored and reinforced in a new health economics study into CMA management and the recently published paper ‘*Cost-effectiveness of Using an Extensively Hydrolysed Casein Formula Supplemented with Lactobacillus Rhamnosus GG in Managing IgE-mediated Cow's Milk Protein Allergy in the UK*’¹¹

Its aim was to estimate the cost-effectiveness of using an eHCF plus the probiotic *Lactobacillus rhamnosus* GG (eHCF with LGG®) – compared to an eHCF alone – as first-line dietary management for IgE-mediated CMA in the UK.¹

The study showed that eHCF with LGG® improves patient outcomes, releases NHS resources and reduces NHS costs when compared to using eHCF alone.¹

Figure 2: eHCF with LGG® is clinically proven to help infants overcome CMA sooner than other formulas¹⁷



The primary measure of clinical effectiveness was the probability of being free of allergic symptoms (i.e. urticaria, eczema, asthma and rhinoconjunctivitis). The secondary clinical effectiveness measure was the probability of developing tolerance to cow's milk. From these outcomes cost-effectiveness of eHCF with LGG® was determined.¹

Resources for CMA management in the NHS were determined by interviewing GPs who managed CMA according to local and National Institute for Health and Care Excellence (NICE) guidance. Costs for the NHS were assigned to each resource. Resource use included usage of formula feed up to 24 months of age; GP, paediatric specialists and dietitian visits; A&E attendance and hospital admissions; and medicines for treating symptoms (PPIs, systematic corticosteroids, antihistamine, emollients, inhaled corticosteroids and salbutamol) over three and five years from starting formula feeding.¹

eHCF with LGG® increased the probability of being symptom free and of acquiring tolerance to cow's milk at three and five years (see **Figure 3**).

The estimated total healthcare cost over five years for infants with diagnosed IgE mediated CMA initially fed eHCF with LGG® was less than eHCF alone (£4,229 vs. £5,136 per patient) with a reduction in NHS costs per patient of -£497 and -£907 at three and five years respectively using eHCF with LGG® (see **Figure 4**). The cost for each additional infant successfully managed with eHCF with LGG® vs eHCF alone (the incremental cost-effectiveness ratio)²³ showed eHCF with LGG® to be a dominant, cost-effective first-line dietary strategy for managing infants with IgE mediated CMA.¹

The potential for bias and uncertainty was mitigated using a sensitivity analysis which looked at reducing the costs of the comparator eHCF and changing the amount of resources needed to manage allergic manifestations. In all scenarios eHCF with LGG® remained cost-effective.¹

Conclusion

First-line dietary management of newly diagnosed IgE-mediated infants with eHCF with LGG® instead of an eHCF alone improves patient outcomes, releases healthcare resources for alternate use, reduces NHS cost of patient management and thereby equates to a cost-effective strategy to the NHS.

For paediatricians and dietitians at the front line, using the right eHCF will lead to a simpler CMA journey for their patients, with potentially fewer medical interventions, freeing valuable time and resources but, ultimately, providing quality of life benefits associated with an earlier return to a diet containing cow's milk and one with less likelihood of future allergic conditions.

In CMA, specialist formulas vary by cost, but when choosing a hypoallergenic formula rather than just comparing price per tin, considering how clinical outcomes can impact the healthcare resources required may be a key driver for cost savings.

These cost savings directly relate to better outcomes; outcomes for the child and their family and for the NHS budget too.

Figure 3: Expected Clinical Outcomes using eHCF with LGG® vs eHCF Alone¹

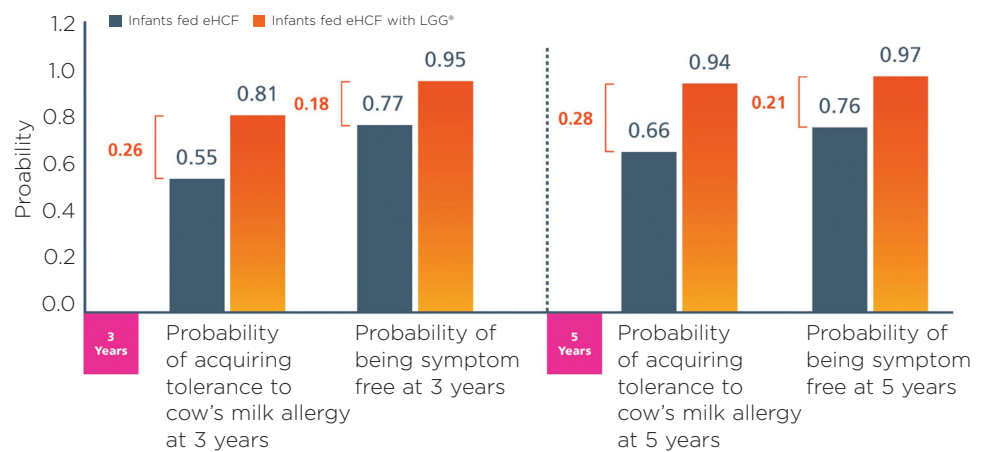


Figure 4: NHS Cost Savings with eHCF with LGG® at 3 and 5 Years¹



IMPORTANT NOTICE: Breastfeeding is best for babies. The decision to discontinue breastfeeding may be difficult to reverse and the introduction of partial bottle-feeding may reduce breast milk supply. The financial benefits of breastfeeding should be considered before bottle-feeding is initiated. Failure to follow preparation instructions carefully may be harmful to your baby's health. Parents should always be advised by an independent healthcare professional regarding infant feeding. Products of Mead Johnson must be under medical supervision. Trademark of Mead Johnson & Company LGG® 2019 Mead Johnson & Company, LCC. All rights reserved. LGG® and the LGG® logo are registered trademark of Chr. Hansen A/S.

BR-M-01651

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