

# Case Study: Baby J

## Use of Neocate Syneo in a food allergic infant

Paediatric Allergy Dietitian – London

Baby J was referred at seven months of age for dietetic assessment and management of his multiple food allergies (IgE and non-IgE mediated), eosinophilic oesophagitis and growth concerns.

### Background

There is a family history of atopy and he was born by emergency caesarean section at term. He was given antibiotics at birth for five days due to maternal pyrexia. Maternal antibiotics were also administered; all of which are factors which potentially affected his and his mother's microbiome.

Baby J was discharged home on day two on exclusive breastfeeds. He continued to be exclusively breastfed until solids were introduced around six months of age. He was happy, well and content for the first few months of life, without any growth concerns.

Baby J developed widespread eczema at two months, which failed to respond to regular emollient usage and 1% hydrocortisone. Mum removed milk and soya from her own diet due to concerns these foods were making his skin worse and because her older child had non-IgE mediated cow's milk protein allergy (CMPA) manifesting in eczema as an infant and, therefore, had previously followed an elimination diet herself.

The eczema improved, however remained problematic, and at four months he was seen by a consultant allergist, who recommended regular emollient application, Daktacort on the face and neck and Eumovate on the body, alongside continued maternal exclusion of milk and a soya-free diet.

Once the eczema was well controlled, a trial reintroduction of milk and/or soya back into Mum's diet was recommended to assess tolerance.

Symptoms of vomiting, food refusal and poor growth began after solids were introduced and coincided with the introduction of soya around six months of age.

### Clinical presentation

#### Problems

- **Eosinophilic oesophagitis** (on six-food-elimination diet, as recommended by paediatric gastroenterologist)
- **Gastrointestinal** (food allergy)
- **Atopic eczema**
- **IgE mediated wheat and lentil allergy**
- **Sensitised to peanut, sesame and multiple tree nuts**

Solids were introduced around six months and he was weaned onto a milk and soya-free diet. When solids were introduced, Baby J experienced constipation, passing hard dry stools, every 2-3 days with straining and discomfort. Around this time, Mum removed egg from her own diet in addition due to concerns that egg was worsening these symptoms, which seemed to help Baby J's bowel opening.

Once he was established on two meals and a variety of foods, Mum trialled a three-day introduction of soya formula to Baby J. This resulted in a sudden onset of forceful, blood stained vomiting and a single episode of frank haematemesis, following which Baby J was admitted to hospital. Blood tests revealed a haemoglobin drop, significant eosinophilia and raised white cell count.

Baby J underwent an ultrasound, which was normal, and was discharged home following initiation of omeprazole (20 mg twice a day).

He remained symptomatic, with regular vomiting after meals and breastfeeds and was beginning to show signs of food refusal. He was therefore seen by a paediatric gastroenterologist who conducted an upper GI endoscopy, which revealed significant inflammation, limited largely to the oesophagus with greater than 70 eosinophils per high power field, following which he was diagnosed with eosinophilic oesophagitis (EoE). He was started on a six-food elimination diet (avoiding milk, egg, soy, wheat, nuts and shellfish) and budesonide 0.5 mg every day. He also underwent skin prick testing which showed marked sensitisation to multiple foods (see **Table One** for more details).

**Table One: Skin Prick Test Results for Baby J**

Food	Skin prick test result (mm)
Cow's Milk (fresh)	22
Egg	0
Soya	0
Wheat	5
Sesame	7
Peanut	5
Almond	5
Cashew	0
Walnut	0
Hazelnut	3
Lentil	10

#### Neocate Syneo Case Study Series

A series of case studies sharing experiences and best practice surrounding the dietary management of Cow's Milk Allergy, Multiple Food Protein Allergies and other conditions requiring an amino acid-based formula.

## Management

### Dietetic assessment

Baby J was initially referred to a dietitian at 7 ½ months of age following his diagnosis of EoE and multiple food allergies. At the time he was breastfed on demand (with Mum avoiding cow’s milk, soya and egg and taking a calcium and vitamin D supplement) and taking expressed breastmilk (EBM) from a bottle. He had just started on budesamide and a six-food elimination diet but remained uncomfortable. The vomiting after meals had improved but he continued to vomit intermittently (often twice daily) and was exhibiting signs of feeding aversion. He had previously accepted a variety of textures (puree, lumpy and finger foods), however, following the onset of regular vomiting, he had become fussy at meals times, preferring small smooth purees and sweeter foods and refusing all lumpy, textured and finger foods. He was taking a multivitamin supplement daily.

He drank 2-3 bottles of EBM daily (drinking 100-150 ml which had fallen from 180-200 ml at a time). Mum was keen to introduce formula in addition to breastfeeding, as she had returned to work

and was finding it hard to express enough breastmilk, she explained that she was also finding the milk, soya and egg free diet difficult to follow.

### Growth

On initial assessment, Baby J’s weight had fallen from the 50th centile (before 6 months and the onset of symptoms) to the 9th-25th centile and his length falling from 50th to 25th centile. See **Table Two** and **Figure 1** for further details. His recent blood tests revealed that his haemoglobin, ferritin and iron levels were all now within the normal range.

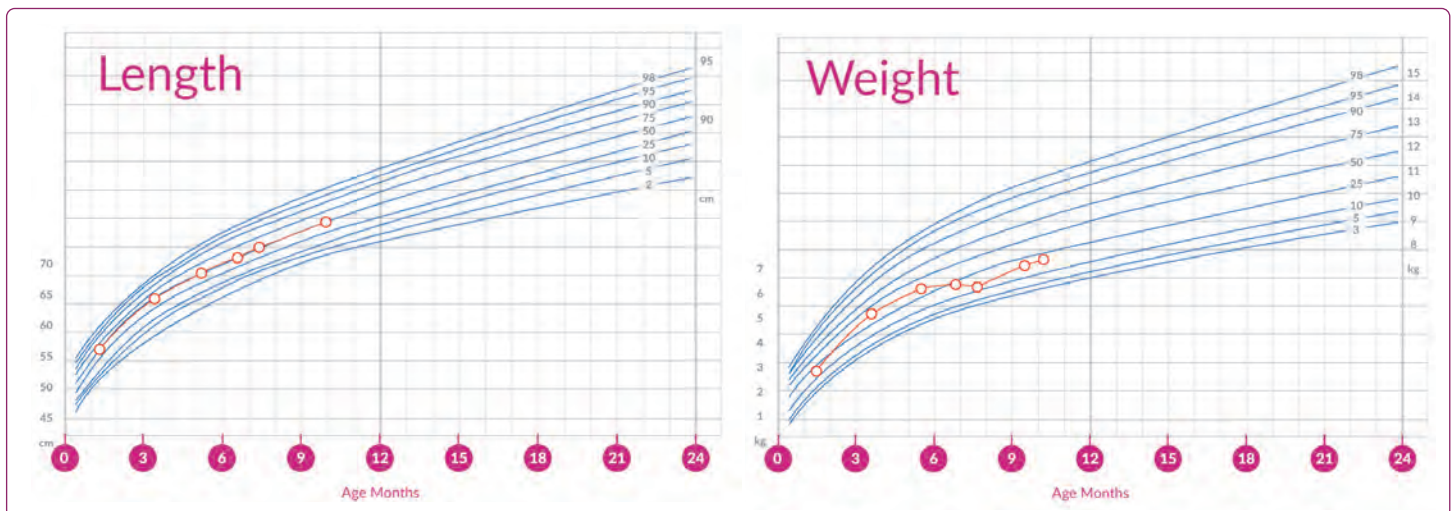
### Aims of nutritional intervention

- Ensure adequate oral intake for Baby J to support development and catch up growth.
- Aid symptom control through adherence to a milk, soya, egg, wheat, shellfish, peanut, tree nut, sesame and lentil free diet.
- Support Mum with milk, soya and egg free diet whilst breastfeeding, ensuring adequate macro- and micronutrient intake.
- Support parents with the introduction of hypoallergenic formula alongside breastfeeding.
- Support Mum regarding practical advice to aid food behaviours.

Table Two: Growth

Age	Weight (kg)	Centile	Height (cm)	Centile
1 month	4.5	50th	54.8	50th
3 months, 5 days	6.45	50th	62.4	50th-57th
5 months, 2 days	7.36	25th-50th	65.9	50th
6 months, 14 days	7.5	25th	67.9	25th-50th
7 months, 7 days	7.44	9th-25th	69.5	50th
9 months, 5 days	8.16	9th-25th	-	-
9 months, 27 days	8.46	25th	73.2	50th

Figure 1: Growth Chart



## Dietetic management plan

- Prescription of Neocate Syneo following Mum's request to introduce formula in addition to breastfeeds.

*Rationale:* In accordance with the Diagnosis and Rationale for Action against Cow's Milk Allergy (DRACMA), British Society for Allergy and Clinical Immunology (BSACI), European Society for Paediatric Gastroenterology Hepatology and Nutrition (ESPGHAN) and iMAP guidelines, an amino-acid formula was used rather than extensively hydrolysed formula due to his diagnosis of EoE. Neocate Syneo was chosen over other amino-acid formulas as Mum expressed a desire to use probiotics, and considering the multiple factors for Baby J which may have had a negative impact on the microbiome, this was the most suitable formula.

*Potential factors to consider:* Introducing hypoallergenic formula at this age can be challenging due to the taste of these formulas

- Dietetic counselling was provided on the introduction of the formula (e.g. Neocate Syneo can be mixed with EBM and must then be used straight away), formula preparation, storage and potential short-term side effects.
- Advice regarding allergen avoidance for Mum and baby and support regarding food refusal was provided.

## Dietetic review

A review at nine months of age revealed that his vomiting had stopped. He was taking 500 ml Neocate Syneo daily providing 61 ml/kg, 42 kcal/kg and 1.2g protein/kg in addition to breastfeeds on demand, which were predominately overnight. He had started accepting and enjoying a variety of foods, however, textures remained an issue. His weight had increased towards the 25th centile and his length remained on the 50th centile.

Mum explained that she had introduced the Neocate Syneo as recommended over a gradual period of two weeks - initially

offering 25 ml (25%) Neocate Syneo and 75 ml EBM (75%) for 3-4 days then moving on to 50%/50%, 75%/25%. She noticed a slight increase in abdominal distension and flatulence, however, this improved after one week. No other side effects were noted.

## Discussion

- This case highlights the successful introduction of Neocate Syneo in to the diet of a 7-month-old infant with a complex presentation with EoE, multiple food allergies and growth concerns. The advice and support of the dietitian is paramount in complex cases such as these, and vital to assist parents with the introduction of hypoallergenic formulas at this age.
- Neocate Syneo, which contains synbiotics, was recommended over other amino-acid formulas due to the potential benefits of the addition of pre- and probiotics considering the multiple factors that may have negatively impacted on Baby J's microbiome and due to Mum's interest in probiotics.

## Conclusion

**Neocate Syneo was successfully introduced into the diet of this seven-month-old infant and was tolerated.**

### Product usage

- Oral nutritional supplement
- Tube feed
- Sole source of nutrition
- Supplement to an elimination diet

Calorie density: 0.68 kcal/ml  
(standard concentration)

### Patient profile

- Anaphylaxis
- Atopic Dermatitis (AD)
- Faltering growth
- Multiple Food Allergies (MFA)
- GI symptoms
- Symptomatic on breast milk
- Symptomatic on an eHF

References: **1.** Venter C, 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. **2.** Fiocchi A, et al. (2010). Diagnosis and rationale for action against cow's milk allergy (DRACMA): a summary report. *J Allergy Clin Immunol*; 126(6): 1119-1128. **3.** Koletzko S, et al. (2012). Diagnostic approach and management of cow's-milk protein allergy in infants and children: ESPGHAN GI Committee practical guidelines. *J Pediatr Gastroenterol Nutr*; 55(2): 221-229. **4.** NICE (2015). Cows' milk protein allergy in children. NICE: Clinical Knowledge Summaries. Accessed online: <https://cks.nice.org.uk/cows-milk-protein-allergy-in-children> (Nov 2018). **5.** Lozinsky AC, et al. (2015). Cow's milk protein allergy from diagnosis to management: a very different journey for general practitioners and parents. *Children*; 2(3): 317-329. **6.** Meyer R, Groetch M, Venter C (2018). When Should Infants with Cow's Milk Protein Allergy Use an Amino Acid Formula? A Practical Guide. *J Allergy Clin Immunol Pract*; 6(2): 383-399. **7.** Candy DCA, et al (2018). A synbiotic-containing amino-acid-based formula improves gut microbiota in non-IgE-mediated allergic infants. *Pediatr Res*; 83(3): 677-686.

This case study is intended for Healthcare Professionals only.

Neocate Syneo is a Food for Special Medical Purposes for the dietary management of Cow's Milk Allergy, Multiple Food Protein Allergies and other conditions requiring an amino acid-based formula. Neocate Syneo must be used under medical supervision after full consideration of all feeding options, including breastfeeding.