Colic, Reflux or Cow's Milk Protein Allergy? – a Primary Care Perspective

Julie Nicol, Paediatric & Prescribing Support Dietitian
NHS Fife

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Content

- Findings from Paediatric Nutritional Prescribing review in Primary Care
- What is Colic, Gastro-oesophageal reflux (GOR) and CMPA
- First line management of GORD
- How to manage suspected CMPA
- Case discussions

Background

- A permanent 0.6wte Prescribing Support Dietitian (PSD) was appointed in NHS Fife February 2015.
- To review nutritional prescribing in Primary Care, encouraging adherence to current Oral Nutritional Support (ONS) and Cow's Milk Protein Allergy (CMPA) pathways and formulary.
- Ensuring nutritional prescribing is safe and cost effective.

What was identified..........

- Pilot data from the first 4 practices reviewed revealed that CMPA remained the top indication for prescribing paediatric borderline substances
- Infants who were commenced on appropriate formulas for suspected CMPA were not always being re-challenged to confirm diagnosis
- Some families missed out on dietetic support and advice
- Lactose free formulas constituted 16% of total paediatric borderline substances prescribed which was surprisingly high considering Primary Lactose Intolerance is rare and Secondary Lactose Intolerance is usually transient. Confusion between lactose intolerance and CMPA

Cow's Milk Protein Allergy Care Pathway

Diagnosis and Management of Infants with Suspected Cow's Milk Protein Allergy.

A guide for healthcare professionals working in primary care.

This document aims to provide healthcare professionals in primary care with an awareness and understanding of the diagnosis and management of cow's milk protein allergy. It also provides guidance on formula choice and when a referral to secondary care (Dietitian or Paediatrician) is indicated.

Written by Laura Logan and Janet Purves.
Edited and produced by Laura Logan and Alison Macleod on behalf of the NHS Fife Paediatric Dietitians, Nutrition and Dietetic Department, Aug 2011.
Revised by Laura Logan and Janet Purves in February 2016..

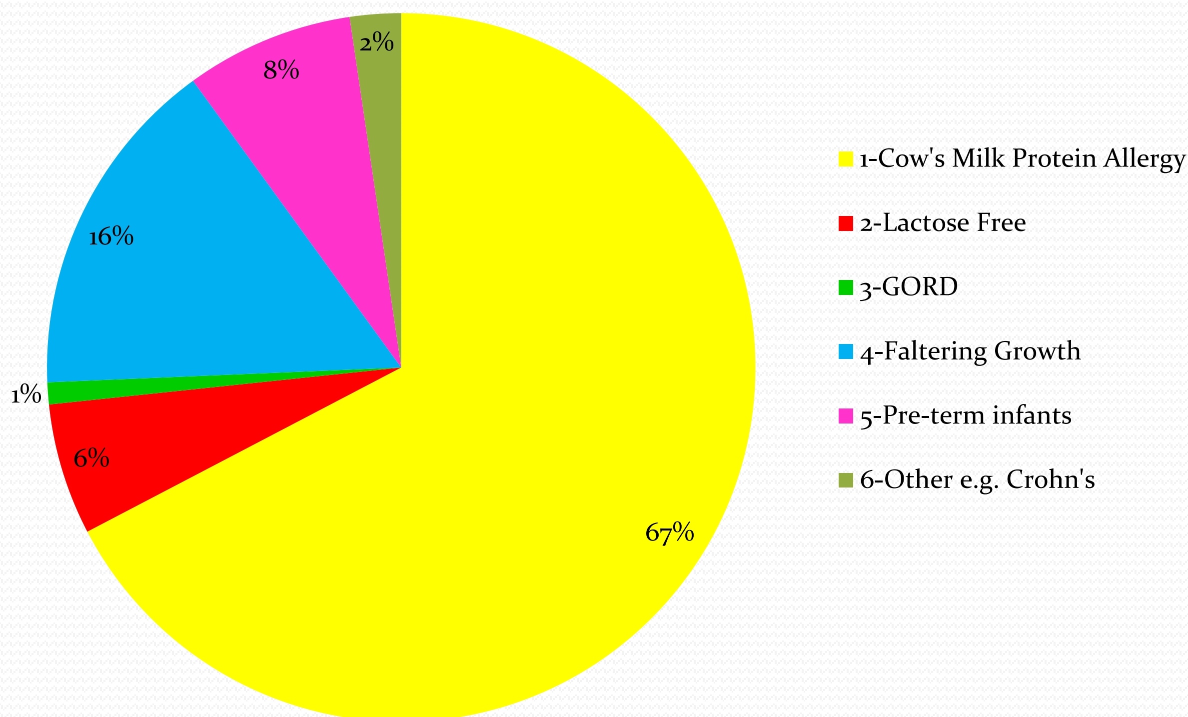
Version 4 Date: February 2016 Next Review Date: February 2018
Document approved on behalf of NHS Fife by NHS Fife Area Drugs and Therapeutics Committee December 2011

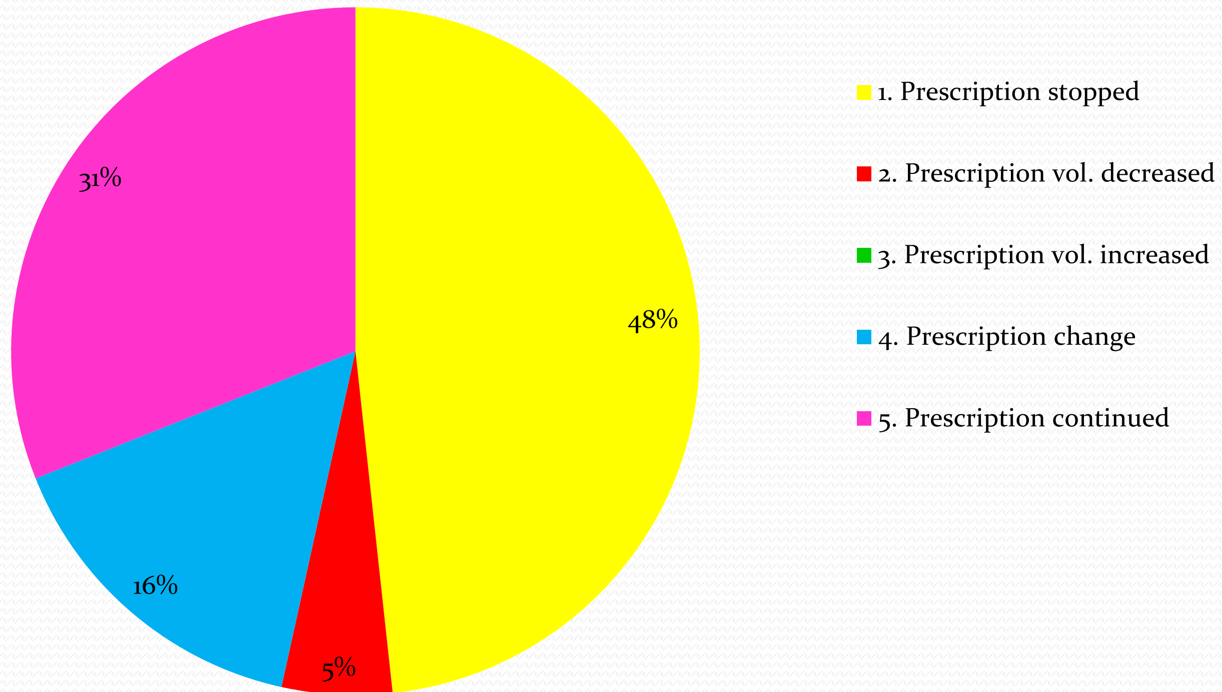
What next?

- April 2016 - additional 0.2 wte Paediatric Prescribing Support Dietitian appointed for 18 months to provide the opportunity to evaluate paediatric nutritional prescribing further and help provide further support and guidance where required.
- Data was obtained for the top 30 high spend GP practices and nutritional prescribing reviews undertaken in 28 practices.
- Records of paediatric patients on nutritional products were reviewed for appropriateness, adherence to Fife's Formulary and whether the CMPA pathway being followed.
- Liaised with paediatric dietitian's regarding known patients, prescription amendments, prescription volumes etc.
- PSDs offered dietetic reviews in the practices where appropriate.

The records of 298 patients on paediatric nutritional products were reviewed:
67% had suspected CMPA

The CMPA Care pathway appeared to be being followed in less than half of patients (46%)
87% adherence to Fife Formulary





Outcomes of Paediatric Dietetic Prescribing Support Reviews
0%
31%
48%
16%
5%
1. Prescription stopped
2. Prescription vol. decreased
3. Prescription vol. increased
4. Prescription change
5. Prescription continued

What Else?

- Many infants have several appointments before CMPA is suspected
- Large number presenting with reflux and colic type symptoms
- Some put on anti reflux medications at first appointment without appearing to be any mention of feed volumes or positioning advice
- Some commence/change anti reflux medications at same time as specialist formula commenced/changed
- Is it sometimes about managing parents' expectations?

Alex

- Presented by a stressed first time mum at 6 weeks old, vomiting after and between formula feeds and very unsettled particularly in the evening.

  - Adequate weight gain, on average 2-3 soft stools/ day. Being offered 5oz (150ml) feeds 4 hourly

- What next?

- **Is it colic, reflux or CMPA?**

Lily

- 12 weeks old, youngest of 3 siblings, 3rd visit to GP with vomiting between formula feeds, prolonged colic type pains and constipation
  - Adequate weight gain, health visitor happy with amounts and frequency of feeding. Older siblings have hayfever. Mum has hayfever and asthma

- What next?
- **Is it colic, reflux or CMPA?**

Kyle

- 4 months old. 2nd visit to GP with diarrhoea, wind and generally unsettled. Whole family had a D & V virus 2 weeks ago
  - Vomiting stopped. Small drift in weight but feeding ok again.
- What next?
- **Is it colic, refux, CMPA or something else………. ?**

Colic

“Severe pain in the abdomen caused by wind or obstruction in the intestines and suffered especially by babies”

“When a baby cries a lot but there's no obvious cause. It's a common problem that should get better on its own.”

Gastro-oesophageal reflux (GOR)

“the passive transfer of stomach contents in to the oesophagus with or without vomiting or regurgitation”

GOR is a normal physiological process occurring several times a day in healthy infants, children and adults. Regurgitation is reported in 23-40% of all infants but reduces in the first year of life to approx 5% of 10-12 month olds.

Gastro-oesophageal reflux disease (GORD) occurs when reflux of gastric contents causes troublesome symptoms and/or complications.

GORD

Symptoms and signs of GORD (i.e. more than simple GOR or regurgitation):

- Increasing frequency and intensity of regurgitation and/or vomiting
- Pronounced irritability with or without back arching
- Refusal to feed, pain during feeding or dysphagia
- Growth faltering
- Haematemesis
- Respiratory symptoms e.g. chronic cough, wheeze, recurrent chest infections
- Apnoeas or Acute Life Threatening Events

Cow's Milk Protein Allergy

- Allergy to milk proteins (Casein, Whey)
- Most common food allergy in children < 3yrs
- Most symptoms present before 6months of age
- Prevalence 1.8-7.5% in infancy, 2-3% population
- Prevalence in exclusively breast fed infants 0.4-0.5%
- Most children outgrow cows milk protein allergy during childhood
- Lactose intolerance may be confused with non-IgE mediated cows milk allergy as symptoms overlap

Luyt *et al* (2014)

Symptoms of mild– moderate non IgE mediated CMPA

Usually 2-72hrs after ingesting CMP. Usually several symptoms

Gastrointestinal	**Skin**
Irritability - colic	Pruritis (itching)
Vomiting	Erythema (flushing)
Food refusal or aversion	Non specific rashes
Diarrhoea	Moderate persistent atopic dermatitis
Constipation	
Abdominal discomfort	
Blood or mucous in stools of an otherwise well infant	

Symptoms of mild– moderate IgE mediated CMPA

Minutes - 2hrs after ingesting CMP. One or more of these symptoms

Gastrointestinal	Skin	Respiratory
Abdominal pain	Pruritis (itching)	Rhinitis
Vomiting	Hives	Conjuntivitis
Diarrhoea	Erythema (flushing)	
Irritability - colic	Angiodema (swelling)	

History is key

Initial assessment:

History and examination to assess for GORD or other diagnosis plus the following:

Feeding history

- Breast or formula fed
- Volume and frequency of feeds
- Positioning
- Weight and length plotted on growth chart
- Urinalysis if history suggestive of UTI

How much & how often

Age	Feeding guidance: infant formula	Suggested intake per day
Up to 2 weeks	7-8 feeds per day[1] 60-70ml per feed [1] *Breastfed babies are likely to feed much more frequently and that is perfectly normal.*	420-560ml per day[1]
2 - 8 weeks	6-7 feeds per day 75-105ml per feed	450-735ml per day
2 - 3 months (9 - 14 weeks)	5-6 feeds per day 105-180ml per feed	525-1,080ml per day
3 - 5 months (15 - 25 weeks)	5 feeds per day 180-210ml per feed	900-1,050ml per day
About 6 months (26 weeks)	4 feeds per day 210-240ml per feed	840-960ml per day

First Steps Nutrition Trust: A simple guide to Infant Milks. February 2019

GORD

Step 1

Parental education and reassurance

Practical advice such as:

- Holding baby fairly upright during a feed
- Keeping the teat full of milk to prevent air bubbles
- Encourage tummy time if baby is awake after a feed
- Elevate the head of the cot by 30*
- Avoid overfeeding (take feed history), maximum is 150ml/kg/day if < 6 months old.
- Encourage smaller more frequent feeds

GORD

Step 2

If breast fed -If a breast feeding assessment and advice leads to no improvement consider Gaviscon® infant dual sachet

or use a feed thickener (e.g. Instant Carobel given as a small amount of thick gel before and during feeds

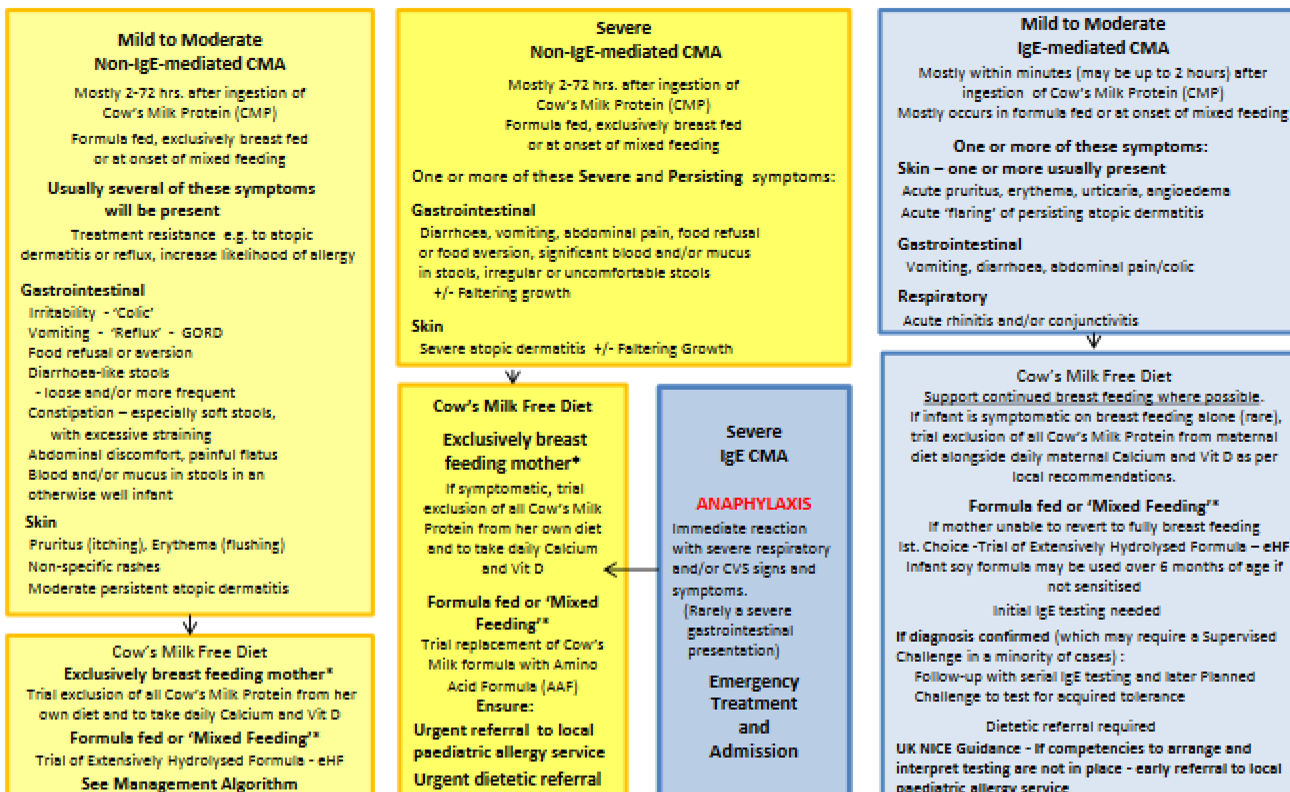
If bottle fed-Feed thickener (e.g. Instant Carobel). Or Suggest over the counter Pre thickened formula (should not be used in combination with other feed thickeners or antacids)

The iMAP Allergy-focused Clinical History for Suspected Cow's Milk Allergy in Infancy

'The Cornerstone of the Diagnosis'

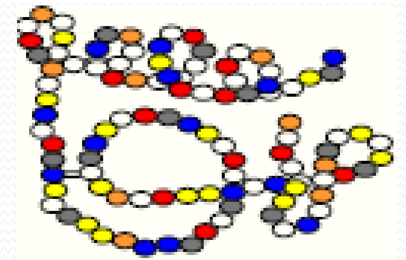
Ask about:

- A family history of atopic disease (atopic dermatitis, asthma, allergic rhinitis or food allergy) in parents or siblings
  – a reported history along with symptoms of suspected cow's milk allergy makes the diagnosis more likely; this applies to both IgE-mediated and non-IgE-mediated
- Sources of cow's milk protein and how much is being or was ingested:
  Exclusive breast feeding - when cow's milk protein from maternal diet comes through in the breast milk (low risk of clinical allergy)
  Mixed feeding - when cow's milk protein is given to the breast feeding infant e.g. top-up formulas, on weaning with solids
  Formula-feeding infant - the commonest presentation, particularly in countries where there is poor adherence with the WHO guidance of exclusive breastfeeding for 6 months
- Presenting symptoms, to include:
  - if more than one symptom, the sequence of clinical presentation of each one
  - age of first onset
  - timing of onset following ingestion (atopic dermatitis - such 'timing' can be very variable)
    IgE-mediated - usually within minutes, but can be up to 2 hours
    Non-IgE-mediated - usually after ≥2 hours or even days
  - duration, severity and frequency
  - reproducibility on repeated exposure
  - amount and form of milk protein that may be causing symptoms
- Details of any concern with feeding difficulties and/or poor growth
- Details of any changes in diet and any apparent response to such changes
- Details of any other previous management, including medication, for the presenting symptoms and any apparent response to this

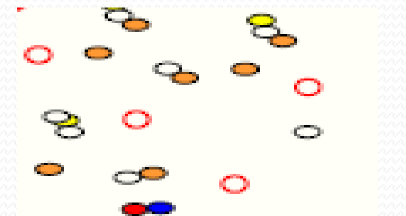


UK Adaptation of iMAP Guideline for Primary Care and 'First Contact' Clinicians
Presentation of Suspected Cow's Milk Allergy (CMA) in the 1st Year of Life
Having taken an Allergy-focused Clinical History and Physically Examined
Oct 2018
Approx. 2% of UK infants have CMA – most children with the symptoms listed below will not have CMA & do not require an elimination diet but there should be an increased index of suspicion in infants with multiple, persistent, significant or treatment-resistant symptoms. Breast milk is the ideal nutrition for infants with CMA. iMAP primarily guides on early recognition of CMA, then confirmation or exclusion, followed by the optimal management of confirmed mild-to-moderate Non-IgE CMA.
Mild to Moderate Non-IgE-mediated CMA
Mostly 2-72 hrs. after ingestion of Cow's Milk Protein (CMP)
Formula fed, exclusively breast fed or at onset of mixed feeding
Usually several of these symptoms will be present
Treatment resistance e.g. to atopic dermatitis or reflux, increase likelihood of allergy
Gastrointestinal
Irritability - 'Colic'
Vomiting - 'Reflux' - GORD
Food refusal or aversion
Diarrhoea-like stools
- loose and/or more frequent
Constipation – especially soft stools, with excessive straining
Abdominal discomfort, painful flatus
Blood and/or mucus in stools in an otherwise well infant
Skin
Pruritus (itching), Erythema (flushing)
Non-specific rashes
Moderate persistent atopic dermatitis
Cow's Milk Free Diet
Exclusively breast feeding mother*
Trial exclusion of all Cow's Milk Protein from her own diet and to take daily Calcium and Vit D
Formula fed or 'Mixed Feeding'*
Trial of Extensively Hydrolysed Formula - eHF
See Management Algorithm
Severe Non-IgE-mediated CMA
Mostly 2-72 hrs. after ingestion of Cow's Milk Protein (CMP)
Formula fed, exclusively breast fed or at onset of mixed feeding
One or more of these Severe and Persisting symptoms:
Gastrointestinal
Diarrhoea, vomiting, abdominal pain, food refusal or food aversion, significant blood and/or mucus in stools, irregular or uncomfortable stools
+/- Faltering growth
Skin
Severe atopic dermatitis +/- Faltering Growth
Cow's Milk Free Diet
Exclusively breast feeding mother*
If symptomatic, trial exclusion of all Cow's Milk Protein from her own diet and to take daily Calcium and Vit D
Formula fed or 'Mixed Feeding'*
Trial replacement of Cow's Milk formula with Amino Acid Formula (AAF)
Ensure:
Urgent referral to local paediatric allergy service
Urgent dietetic referral
Severe IgE CMA
ANAPHYLAXIS
Immediate reaction with severe respiratory and/or CVS signs and symptoms.
(Rarely a severe gastrointestinal presentation)
Emergency Treatment and Admission
Mild to Moderate IgE-mediated CMA
Mostly within minutes (may be up to 2 hours) after ingestion of Cow's Milk Protein (CMP)
Mostly occurs in formula fed or at onset of mixed feeding
One or more of these symptoms:
Skin – one or more usually present
Acute pruritus, erythema, urticaria, angioedema
Acute 'flaring' of persisting atopic dermatitis
Gastrointestinal
Vomiting, diarrhoea, abdominal pain/colic
Respiratory
Acute rhinitis and/or conjunctivitis
Cow's Milk Free Diet
Support continued breast feeding where possible.
If infant is symptomatic on breast feeding alone (rare), trial exclusion of all Cow's Milk Protein from maternal diet alongside daily maternal Calcium and Vit D as per local recommendations.
Formula fed or 'Mixed Feeding'*
If mother unable to revert to fully breast feeding
Ist. Choice -Trial of Extensively Hydrolysed Formula – eHF
Infant soy formula may be used over 6 months of age if not sensitised
Initial IgE testing needed
If diagnosis confirmed (which may require a Supervised Challenge in a minority of cases) :
Follow-up with serial IgE testing and later Planned Challenge to test for acquired tolerance
Dietetic referral required
UK NICE Guidance - If competencies to arrange and interpret testing are not in place - early referral to local paediatric allergy service
iMAP has been developed completely independent of any industry involvement or funding.
* Actively support continued breastfeeding

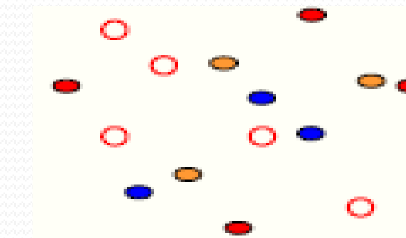
- Intact Cow’s Milk Protein - CMP



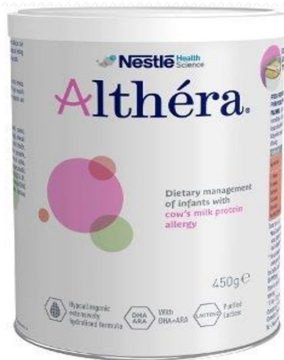
- Extensively Hydrolysed Formula – EHF
  - CMP Peptide chains, majority <1.5D
  - Tolerated by > 90% of infants with CMPA



- Amino Acid Formula – AAF
  - 100% Amino Acid base



Extensively Hydrolysed formula



Slide courtesy of Janet Purves

Amino Acid Formula

Slide courtesy of Janet Purves

Cost Comparison

Extensively Hydrolysed Formula	
Nutamigen 1 & 2 with LGG	£11.21/400g tin
Aptamil Pepti 1 & 2	£9.87/400g tin
Althera	£11.09/450g tin
Similac Alimentum	£9.10/400g tin

Cost Comparison

Amino Acid Formula	
Nutamigen Puramino	£23.00/400g tin
Neocate LCP	£29.56/400g tin
Alfamino	£22.98/400g tin

Patient and Health Care Professional Educational Resources

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Does My Child Have Cow's Milk Protein Allergy

Advice for parents and carers whose children may have a cow's milk protein allergy

Some children are allergic to the protein in cow's milk. This is called cow's milk protein allergy or CMPA. They may have symptoms which appear immediately (within 2 hours) e.g. swollen lips, tongue, hives, or symptoms which may be delayed (taking up to 48 hours to appear). Delayed symptoms may include diarrhoea, constipation, colic, vomiting, blood or mucous in stools, or poor weight gain.

There are no reliable tests to diagnose a delayed CMPA. Usually a trial of a cow's milk free diet followed by a re-challenge with cow's milk protein after 4 weeks is the best way to decide whether your child has an allergy to cow's milk protein. **This trial can be done at home unless your child has had an immediate reaction to cow's milk.**

An allergy to cow's milk is not the same as lactose intolerance. Products which are lactose free are not free from cow's milk protein.

Produced by Paediatric and Prescribing Support Dietitians Date: May 2016 Review Date: February 2018

NHS Fife

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Infant Feeding and Prescribing Guidelines

A guide for healthcare professionals working in primary care

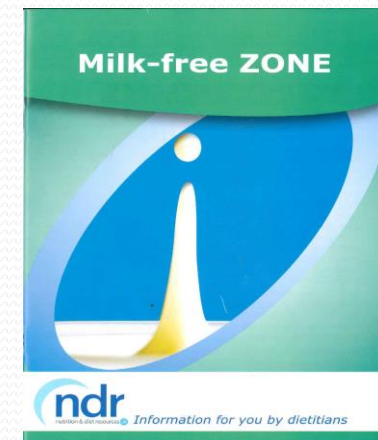
These guidelines aim to provide information on dietary related clinical conditions and the appropriate use of specialist infant formula. They advise on:

- Post-discharge formula for pre-term and growth restricted infants, Faltering growth, Gastro-oesophageal reflux, Secondary lactose intolerance and Cow's milk protein allergy
- Which products to prescribe for different clinical conditions
- Quantities to prescribe
- When an over- the- counter product is available and appropriate to use
- Triggers for reviewing and discontinuing prescriptions
- When onward referral to Dietetic or Paediatric services should be considered

Breast feeding provides the optimum nutrition for healthy infants however these guidelines are intended for use for infants who require or are already prescribed a specialist infant formula.

Infant Feeding and Prescribing Guidelines		
Written by: Julie Nicol, Louise McKerrow, Dr Paula Young and Dr John Morrice	Version: 1.0	Date: 21 June 2018
	Page:	Review: June 2019

Patient and Health Care Professional Educational Resources



Alex

- Presented by a stressed first time mum at 6 weeks old, vomiting after and between feeds and very unsettled particularly in the evening.

  - Adequate weight gain, on average 2-3 soft stools/ day. Being offered 5oz (150ml) feeds 4 hourly

- What next?

- **Is it colic, reflux or CMPA?**

Alex

Probably GOR

- Positioning advice
- Elevate mattress
- Smaller, more frequent feeds

  e.g. Alex receiving 150ml x 6 (4hrly)= 900ml

  4kg baby, 150ml/kg/day = approx. 600ml

  Suggest 75-100ml 3hrly = 600- 800ml
- Reassurance

How much & how often

Age	Feeding guidance: infant formula	Suggested intake per day
Up to 2 weeks	7-8 feeds per day[1] 60-70ml per feed [1] *Breastfed babies are likely to feed much more frequently and that is perfectly normal.*	420-560ml per day[1]
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Lily

- 12 weeks old, youngest of 3 siblings, 3rd visit to GP with vomiting between formula feeds, prolonged colic type pains and constipation
  - Adequate weight gain, health visitor happy with amounts and frequency of feeding. Older siblings have hayfever. Mum has hayfever and asthma

- What next?
- **Is it colic, reflux or CMPA?**

Lily

Possible mild- moderate Non-IgE CMPA

- Trial of an EHF for 4-6 weeks
- If symptoms improve reintroduction of normal formula to confirm diagnosis
- Refer to dietetics

Kyle

- 4 months old. 2nd visit to GP with diarrhoea, wind and generally unsettled. Whole family had a D & V virus 2 weeks ago

  - Vomiting stopped. Small drift in weight but feeding ok again and hydrated.

- What next?

- **Is it colic, refux, CMPA or something else………. ?**

Kyle

Possible transient lactose intolerance secondary to GI upset

- If does not settle within a couple of weeks could suggest purchase of an over the counter lactose free formula for 6-8 weeks

Summary

- Many babies have colic, especially in the evening
- Prolonged colic can be a symptom of GORD and CMPA
- Some GOR is normal and reassurance, positioning and feeding advice may be all that's needed
- If treatment for GORD is unsuccessful consider CMPA
- Consider CMPA if there is an allergic family history and symptoms suggest it
- GORD & CMPA often coexist
- Allergy focused history cornerstone of diagnosis

Thank you!

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- Logan, L, Purves, J. Diagnosis and Management of Infants with Suspected Cow's Milk Allergy. A guide for healthcare professionals working in primary care, 2011, revised September 2018
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