DERBYSHIRE JOINT AREA PRESCRIBING COMMITTEE (JAPC)

GUIDANCE ON THE APPROPRIATE USE AND PRESCRIBING OF SPECIALIST INFANT FORMULA IN PRIMARY CARE

JAPC promote breastfeeding as the best form of nutrition for a good start in life for every child.

This guidance covers the use and prescribing of specialist infant formulas for:
cow's milk protein allergy, lactose intolerance/ galactoasemia; as well as information on specialist led area including faltering growth, premature & low birth weight infants

N.B. Cow's milk protein allergy is now referred to as cow's milk allergy (CMA).

- Manage Non-IgE CMA using the GP Patient Pathway (appendix 2) in Southern Derbyshire. Follow Milk Allergy in Primary Care (iMAP) guideline (appendix 3) in North Derbyshire.

- Based on the allergy-focussed history, if non-IgE CMA is suspected, cow's milk elimination should be trialled. In breastfed infants measures to support continued breastfeeding must be taken. Extensively hydrolysed infant formula is the first line choice in formula fed infants with mild to moderate symptoms of CMA. See p. 5 for further detail on cow's milk elimination.

- In infants with suspected mild to moderate non-IgE CMA, perform home challenge using cow's milk 2-4 weeks after starting milk elimination diet to confirm diagnosis. See appendix 5. "The Early Home Reintroduction to Confirm the Diagnosis of Cow's Milk Allergy".

- Refer all confirmed cases of non-IgE CMA to a paediatric dietician (via a paediatrician if necessary) for assessment and dietary advice.

- Infants with confirmed CMA should be given a cow's milk free protein diet free for at least 6 months. Children with non-IgE CMA can be re-challenged from 9 months of age onwards. Most children will outgrow their allergy by 18 months to 2 years of age. If they continue to show symptoms during the cow's milk challenge, most infants over the age of 1 year will be weaned onto a calcium-enriched plant-based milk alternative that can be purchased by parents. There should be a clear plan for weaning and discontinuation included in the care plan from the dietician/specialist.

- Only add infant formula to repeat prescribing template after a review process is established. Clearly document relevant details including quantity (see appendix 6) and next review date.

- Infants with suspected IgE-mediated reactions to cow's milk should be advised to adopt a strict cow's milk free diet to manage symptoms. **Infants with IgE CMA should NOT be challenged with cow's milk in order to confirm their diagnosis**. Refer to allergy clinic.

- Secondary lactose intolerance should be treated in primary care with **over-the-counter** lactose-free formula and lactose-free diet. Secondary lactose intolerance in infants usually lasts 6-8 weeks but may last as long as 3-6 months. Re-challenge after 3-6 months.

- Soya based formula should not be prescribed unless advised by a consultant paediatrician or paediatric dietician. Only children with specific rare medical conditions require a prescribed soya formula after 1 year of age.

- In premature infants, the specialised infant formula should not be prescribed beyond 6 months corrected age. Include review/stop date if added to repeat prescription.

- Powder feeds should be used routinely. Liquid feeds should only be used when advised by appropriate specialist e.g. for immunocompromised patients as advised by neonatal unit

Contents **Page**

1. Introduction 3
2. Cow's milk (protein) allergy 3
   - Diagnosis, referral, and treatment 4
   - Cows milk elimination 5
   - Resources for clinician and patients 6
   - Comparison of formulas for Cow's Milk Protein Allergy 6
3. Lactose intolerance 7
4. Soya formulas and galactosaemia 7
5. Faltering growth 8
6. Premature and low birth weight infants 9
   - Supplementation 10

Appendix 1: Summary of Common Conditions requiring the use of infant formula in primary care
Appendix 2: Southern Derbyshire Non-IgE CMA GP patient pathway.
Appendix 3: The Milk Allergy in Primary Care (iMAP) Guideline for use within North Derbyshire
Appendix 4: North Derbyshire Nutrition and Dietetic Service Referral Form
Appendix 5: The Early Home Reintroduction to Confirm the Diagnosis of Cow's Milk Allergy
Appendix 6: Appropriate quantities to be supplied

Document update	Date
Prices updated in table on page 6. Aptamil Pepti Syneo 400g added with notes	August 2023
remove Alimentum powder- discontinued	April 2024

Consultation

- Dr D Traves and Dr L Starkey, Consultant Paediatricians, UHDB
- Allison Mackenzie, Laura Sheldon, Rachel Gordon, Paediatric Dietitians UHDB
- Rachel Lomax and Sascha Landskron, Paediatric Dietitians, Chesterfield Royal Hospital
- Dr A Foo, Consultant Paediatrician, Chesterfield Royal Hospital
- Denise Pemberton, Infant feeding specialist DCHS

References

- British Dietetic Association: February (2004). Paediatric Group Position Statement on the use of Soya Protein for Infants.
- Department of Health: CMO's Update 37 (2004). *Advice issued on soya-based infant formulas.*
- Department of Health (2016). *Birth to Five.*
- Food Standards Authority & Department of Health (2005). *Guidance for health professionals on safe preparation, storage and handling of powdered infant formula*.
- Fox, A., Brown, T., Walsh, J., Venter, C., Meyer, R., Nowak-Wegrzyn, A., ... & Fleischer, D. (2019). An update to the Milk Allergy in Primary Care guideline. *Clinical and translational allergy*, *9*(1), 1-7.
- Fox, A., & Lovis, Dr M.T. (2019) The Milk Allergy in Primary Care (MAP) Guideline 2019. https://gpifn.org.uk/imap/
- Luyt D et al, 2014. BSACI guideline for the diagnosis and management of cow's milk allergy. *Clin Exp Allergy*; **44**: 642-672
- NICE (2007) Atopic eczema in children: management of atopic eczema in children from birth up to the age of 12 years London:. www.nice.org.uk/CG057
- NICE (2011) Diagnosis and assessment of food allergy in children and young people in primary care and community settings. http://guidance.nice.org.uk/CG116.
- NICE (2017) NG75 Faltering growth: recognition and management of faltering growth in children.
- Venter, C. et al. Better recognition, diagnosis and management of non-IgE-mediated cow's milk allergy in infancy: iMAP – an international interpretation of the MAP (Milk Allergy in Primary Care) guideline. *Clinical and Translational Allergy*, 2017. 7:26.

1. Introduction

This guideline has been developed following local concerns about the high expenditure and inequitable prescribing of infant formulae due to lack of guidance, little evidence and limited primary care expertise in this area. It provides information on some common conditions requiring the use of infant formula including CMA, faltering growth and premature infants, and sets out circumstances in which prescribing is inappropriate.

2. Cow's Milk (Protein) Allergy (CMA)

Less than 2% of UK infants have CMA.
CMA can be classified into IgE mediated and Non-IgE mediated reactions.

- **IgE- mediated reactions are acute and frequently have rapid onset (<2hours)**
- **Non-IgE mediated reactions tend to be delayed and non-acute.**

Symptoms of CMA in infancy are common and include:

Table 1: Signs and symptoms of food allergy (NICE CG116, 2011)

Non-IgE-mediated	**IgE-mediated**
Skin	
• Pruritus • Erythema • Atopic eczema	• Pruritus • Erythema • Acute angioedema – most commonly of the lips, face and around the eyes • Acute urticaria – localised or generalised
Gastrointestinal	
• Gastro-oesophageal reflux disease • Loose or frequent stools • Blood and/or mucus in stools • Abdominal pain • Infantile colic, especially after 3month of age • Food refusal or aversion or feeding difficulties • Constipation • Perianal redness • Pallor and fatigue • Faltering growth in conjunction with at least one or more gastrointestinal symptoms above (with or without significant atopic eczema)	• Angioedema of the lips, tongue and palate • Oral pruritus • Nausea • Colicky abdominal pain • Vomiting • Diarrhoea
Respiratory (usually in combination with one or more of the above symptoms and signs)	
	• Upper respiratory tract symptoms (nasal itching, sneezing, rhinorrhoea or congestion [with or without conjunctivitis]) • Lower respiratory tract symptoms (cough, chest tightness, wheezing or shortness of breath)
Other	
	• Signs or symptoms of anaphylaxis or other systemic allergic reactions

Note: this list is not exhaustive. The absence of these symptoms does not exclude food allergy.

NICE (2011) recommend that an allergy focused clinical history should be completed if food allergy from any cause (e.g. cow's milk) is suspected. See iMAP Allergy-focused Clinical History for Suspected CMA,

CMA should be suspected after careful history taking for the above symptoms and their association with the introduction of cow's milk into the diet. There should be increased suspicion in infants with multiple, persistent severe or treatment-resistant symptoms.

It is recommended that all infants and children with CMA see a dietitian for support with cow's milk free weaning. There should be a clear plan for weaning and discontinuation included in the care plan from the dietician/specialist.

	Non-IgE CMA	**IgE CMA**
Diagnosis	Mild to moderate Non-IgE CMA • Trial exclusion diets must only be considered if allergy-focussed history & examination strongly suggests CMA, especially in exclusively breastfed infants, where measures to support continued breastfeeding must be taken. • If the symptoms improve after 2 weeks on the elimination of cow's milk CMA may be suspected. • **In order to avoid over diagnosis, after 2-4 weeks on prescribed formula or maternal dairy exclusion, normal formula is to be reintroduced, or mother to revert to normal diet to see if symptoms return, thus proving/disproving the CMA diagnosis.** See appendix 5. "The Early Home Reintroduction to Confirm the Diagnosis of Cow's Milk Allergy" (Link). There is a risk of overdiagnosis of CMA if mild, transient or isolated symptoms are over-interpreted, or if milk exclusion diets are not followed up by diagnostic milk reintroductions. Encourage follow up appointment to be booked during the initial consultation.	Infants with suspected IgE-mediated reactions to cow's milk should be advised to adopt a strict cow's milk free diet to manage symptoms. **Unlike non-IgE CMPA, these infants should not be challenged with cow's milk in order to confirm their diagnosis.** For information, IgE mediated/ immediate onset CMA can be diagnosed by a suggestive history and the following: • Exclusion of cow's milk from diet leads to cessation of symptoms • Typical symptoms can be confirmed by skin prick test (these can be arranged by referral to allergy clinic) • There is no need to take routine bloods (e.g. specific IgE levels for milk) to aid in diagnosis unless there is uncertainty about diagnosis or symptoms appear atypical.
Referral	All confirmed cases of non-IgE CMA should be referred to paediatric dieticians. Southern Derbyshire- Refer to Derbyshire Children's Hospital by following local GP Patient pathway for Infants under 1 year of age. **See appendix 2** North Derbyshire-Refer to Chesterfield Royal Hospital as per iMAP guidance via a written referral completed by any member of the primary healthcare team, preferably in a letter or on a Nutrition and Dietetic Service Referral Form. **See appendix 3 & 4.**	**All infants with suspected IgE CMA should be referred to the allergy clinic** at either Derbyshire Children Hospital (via choose and book) or Chesterfield Royal Hospital for • practical advice on allergy management • interpretation of the allergy tests, • nutritional advice, • future re-challenge advice • long-term prescription requirements.
	Infants with suspected milk allergy and faltering growth, severe reflux or an unclear presentation - refer directly to consultant paediatrician	
Treatment	Infants should be given a cow's milk protein-free diet for at least 6 months. Advise will be given by paediatrician and paediatric dietician. Once diagnosis of CMA is confirmed and a management plan put in place, it is recommended that GPs do not initiate changes of formula without consultation with a paediatric dietitian or consultant paediatrician. Frequent changes of formula are not advised in primary care due to the level of parental support required.	
Re-challenging	Children can be challenged to see if they have outgrown CMA, 6 months after initiation of cow's milk exclusion, or from 9 months of age onwards. The majority of children can be expected to outgrow their non-IgE CMA around 18 months to 2 years of age, although some children continue to have symptoms after this age. See next page for further detail.	Cows' milk protein reintroduction should be managed by secondary care. Follow specialist advice.

Cow's milk elimination/ cow's milk protein free diet

Breastfed infants

Exclusively breastfed infants may develop either IgE or Non-IgE CMA (but this is much more rare than in formula fed infants), as some cow's milk proteins from their mother's diet pass into the breastmilk. **Every effort should be made to encourage to continue to breastfeed**, whilst following a cow's milk (and sometimes also soya) free diet. Early support from a dietitian and/or infant feeding specialist may be beneficial to facilitate this and should be considered.

Breastfeeding mothers require 1250mg of calcium and 10microgram of vitamin D per day. Mothers may require self-care supplementation depending on vitamin supplements that they may already be taking. See Derbyshire vitamin D position statement.

Breastfeeding mothers should be provided the BDA Milk Allergy fact sheet for interim advice on cow's milk avoidance (https://www.bda.uk.com/foodfacts/milkallergy.pdf)

Formula fed infants

If breast milk is not available, formula fed infants with CMA should be treated with a hypoallergenic infant formula (See comparisons of formulas on next page for details).

- **Extensively hydrolysed infant formula is the 1st line choice for mild to moderate symptoms.**
- An amino acid infant formula may be the preferred choice in severe cases of CMPA with faltering growth, severe eczema, multiple food allergies, anaphylaxis, and respiratory difficulties.

Initiation of Hypoallergenic Infant formulas

- Initially prescribe 2 x 400g tin of hypoallergenic formula to ensure palatability.
- Advise carers to try the infant with one bottle of new formula made as the manufacturer recommends.
- If the infant is reluctant to take new formula, try a 25:75 mix of new formula with existing formula and gradually increase new formula as the taste is accepted.
- Warn parents that hypoallergenic formula may cause green stools and wind.

For non-IgE CMA diagnostic dietary elimination trial

- Issue acute prescription initially. A fully formula fed infant will usually require around 2-3 tins per week.
- Plan to review at 1-2 weeks to check compliance and clinical progress (e.g.by phone)

On-going prescriptions of hypoallergenic Infant formulas

- If formula well-tolerated and diagnosis confirmed, consider monthly prescriptions.
- To avoid over prescribing, see appendix 6 for number of tins for monthly prescriptions.
- Only add infant formulae to the repeat prescribing template in primary care if a review process is established to ensure the correct product and quantity is prescribed for the age of the infant. Ensure relevant review/stop date is set when added to repeat.
- Most infants requiring a hypoallergenic formula will continue to require the formula on a monthly repeat prescription until the age of 1 year of age.

Rechallenge

Note this is different from the home challenge at 2-4 weeks to confirm diagnosis in suspected non-IgE CMA.

- Children can be challenged to see if they have outgrown CMA, 6 months after initiation of cow's milk exclusion, or from 9 months of age onwards. Therefore, some infants can be expected to outgrow the CMA before 12 months of age.
- If the infant is under the paediatric dietitians at either CRH or Derbyshire Children's Hospital, the paediatric dietitian will review continued requirement for hypoallergenic formula at approximately 1 year of age and update the GP accordingly. Most infants with non-IgE CMA will be rechallenged at home and advice will be provided by the paediatric dietitian.
- Cow's milk protein is gradually introduced as per the locally produced or iMAP Milk Ladder.
- If they continue to show symptoms of CMA during the cow's milk challenge, most infants over the age of 1 year will be weaned onto a calcium-enriched plant-based milk alternative that can be purchased by parents. Monitor prescriptions but do not stop until they have successfully switched over to an alternative preparation, as this may take some time.
- There should be a clear plan for weaning and discontinuation included in the care plan from the dietician/specialist. Most infants will switch to plant-based milk alternative. The main reasons for remaining on the specialist infant formula is faltering growth, multiple food allergies or restrictive diet.
- The majority of children can be expected to outgrow their CMA around 18 months to 2 years of age. Although some children have continued symptoms after this age.

Resources for clinician and patients

- The GP infant feeding network (UK) https://gpifn.org.uk/imap/
- Allergy-focused History- The key questions that need to be addressed when milk allergy is suspected.
- Patient Factsheet for infants suspected of having delayed (non-IgE) type CMA- To explain the diagnosis and the need to confirm it with a planned reintroduction at home.
- Patient Factsheet for infants with symptoms of a possible mild to moderate non-IgE mediated allergy whilst being exclusively or partly breastfed- To support a return to breastfeeding
- The Association of UK Dietitians- Milk allergy: Food Fact Sheet
- The First Steps Nutrition Trust https://www.firststepsnutrition.org/ independent charity
- DCHS Infant Feeding Specialists single point of access 01246 515100.

Comparison of formulas for Cow's Milk Protein Allergy

Products are chosen after a thorough assessment of the individual and doses are dependent on age, weight, calculated requirements, condition and intake.

Name	Tin size	Price per tin	Price/ 100g	Unique Aspects/ Cautions
Extensively hydrolysed formula (1st line for mild to moderate symptoms)				
Aptamil Pepti 1 (Nutricia) Stocked at CRH	400g 800g	£9.86 £19.72	£2.47	Whey hydrolysates, contains lactose and fish oil. More palatable than amino-acid based formula. Pepti 2 suitable for infants from 6 months as part of a mixed diet. There are minimal nutritional differences between the stage 1 and 2 formulas, however stage 2 may benefit those with delayed weaning due to higher amounts of some nutrients such as calcium. It is not necessary to change to Pepti 2 unless advised by a dietitian.
Aptamil Pepti 2 (Nutricia)	400g 800g	£9.86 £19.72	£2.47	
Aptamil Pepti Syneo	400g 800g	£9.86 £19.72	£2.47	Whey hydrolysate, contains fish oil. Not suitable for halal diet, premature or immunocompromised infants.
SMA Althéra (Nestle)	400g	£11.04	£2.76	Whey hydrolysate, contains lactose
Nutramigen with LGG (Mead-Johnson) Stocked at RDH	400g	£11.84	£2.96	Casein hydrolysate, with probiotic. Lactose free. Nutramigen LGG 2 suitable from 6 months as part of a varied diet.
Amino Acid Formula (preferred choice in severe cases of CMA with faltering growth, severe eczema, multiple food allergies, anaphylaxis, and respiratory difficulties				
Nutramigen Puramino	400g	£22.98	£5.75	Amino acid based, no milk protein and no lactose. Contains MCT, coconut and soya oil, and MSG
Neocate LCP (Nutricia)Stocked at RDH & CRH	400g	£22.98	£5.75	Amino acid based, no milk protein and no lactose. Contains coconut oil. Warn parents that stools will be green and more frequent
Neocate Syneo	400g	£24.82	£6.21	Amino acid based, no milk protein and no lactose. Contains prebiotics, probiotic and coconut oil. Some small studies show babies have similar gut microbiota to those of breastfed babies.
SMA Alfamino (Nestle)	400g	£25.73	£6.43	Amino acid based, no milk protein and no lactose. Contains potato starch.

*information obtained from personal communication with Abbott. Prices correct as per MIMs August 2023

Unsuitable formulas for CMA:

- SMA Staydown
- SMA Comfort
- SMA LF (lactose free)
- Enfamil AR (anti-reflux)
- Enfamil O-lac
- Cow & Gate Anti-Reflux
- Cow & Gate Comfort
- HiPP Combiotic Anti-Reflux
- HiPP Combiotic Comfort
- Aptamil Anti-Reflux
- Aptamil Comfort
- Aptamil Lactose Free
- Soya, goat's and sheep's milk formulas

3. Lactose intolerance

Lactose intolerance should not be confused with CMA. It is intolerance to the lactose (sugar) in cow's milk, not an allergy to the protein. "Lactose free" foods and formulas still contain cow's milk protein.

Primary lactose intolerance can occur later in life as we lose the ability to produce lactase. Lactose intolerance can be caused by galactosaemia, a congenital condition, or due to absence of the lactase enzyme, but these are very rare in infants and young children.

Secondary lactose intolerance is the most common form of lactose intolerance and occurs following an infectious gastrointestinal illness. Damage to the small bowel mucosa causes a temporary deficiency in lactase enzyme. Some GPs may feel competent to assess and treat simple cases of secondary lactose intolerance, which will resolve before specialist input could be sought.

Symptoms
Abdominal bloating, increased wind and frothy, loose stools which may in turn cause perianal irritation and redness. Blood or slime in stools is **NOT** a feature of lactose intolerance.

Diagnosis
Lactose intolerance should be suspected in children who have a diarrhoeal illness lasting more than 2 weeks. Resolution of symptoms, usually within 48 hours, when lactose is removed from the diet is the gold standard for diagnosis. Children should be referred if there are any concerns about significant weight loss or if symptoms do not improve.

Treatment
Infants should be given a lactose-free formula. Secondary lactose intolerance should be treated in primary care with **over-the-counter** lactose-free formula and lactose-free diet. Secondary lactose intolerance in infants usually lasts 6-8 weeks but may last as long as 3-6 months, so parents will also need to understand how to follow a low-lactose diet. Referral to a dietitian is recommended if the low-lactose diet is to continue past 4 weeks. Re-challenge after 3-6 months.

Formulas available to buy over the counter for lactose intolerance:

- SMA LF
- Enfamil O-Lac
- Aptamil Lactose Free

3. Soya-based formula

Soya formula was at one time used for infants with CMA, however, should now be **avoided**.
In 2004 the Chief Medical Officer issued a statement advising against the use of soya-based formula in infants with CMA or lactose intolerance. Soya formula is no longer indicated for infants who are milk intolerant or allergic under the age of 6 months, due to its phyto-oestrogen content, and the increased risk of sensitisation to soya protein. Approximately 50% of children with CMA are also intolerant to soya.

The use of soya formula under 6 months of age should be limited to exceptional circumstances to ensure adequate nutrition, for example in children with galactosaemia, or in infants who do not tolerate hypoallergenic formulae in the absence of a soya intolerance.

Soya formula can be recommended for formula fed infants over the age of 6 months who do not tolerate hypoallergenic formula in the absence of soya intolerance (Venter et al., 2013).

Parents wishing to feed their infant on soya-based formula should be advised of the potential risks and instructed to buy the formula over the counter. Soya-based formula is prescribable for infants with galactosaemia only, on the advice of a consultant paediatrician.

For those infants prescribed soya formula, most should convert to supermarket-bought calcium-enriched soya or other plant-based milk alternatives when they reach 1 year of age if their diet is adequate and they are growing well. Only children with specific rare medical conditions (i.e. galactosaemia) may require a prescribed soya formula after this age.

4. Faltering Growth

The term ‘failure to thrive’ was once used to describe infants and young children who failed to reach their expected growth. The term ‘faltering weight’ or ‘faltering growth’ is now the accepted term for infants and children that show a fall in weight or poor weight gain. Under nutrition is recognised as the primary cause of poor weight gain in infancy.

Definition *NICE NG75 (2017):*
Consider using the following as thresholds for concern about faltering growth in infants and children (a centile space being the space between adjacent centile lines on the UK WHO growth charts):

- *a fall across 1 or more weight centile spaces, if birthweight was below the 9th centile*
- *a fall across 2 or more weight centile spaces, if birthweight was between the 9th and 91st centiles*
- *a fall across 3 or more weight centile spaces, if birthweight was above the 91st centile*
- *when current weight is below the 2nd centile for age, whatever the birthweight.*

Treatment
Breastfed infants should be referred to the local breastfeeding specialists/ leads to perform a full breastfeeding assessment as per the NICE NG75 Faltering Growth, and refer to the local weight loss guidance for the acute or community Trust. Consider if there is a medical cause for the faltering growth.

Formula fed infants should have their feeding volumes monitored at home, to ensure that infants under 6months of age are drinking 150ml/kg per day and infants 6-12months of age are drinking 120ml/kg per day.

Once the above has been considered and offered and the weight gain is not improving within two weeks, refer to a paediatrician and paediatric dietitian. If in South Derbyshire, The Paediatrician will complete the referral through to the Paediatric Dietitian if indicated following assessment.

Prescribable infant formulas for faltering growth: (to be used only under the guidance of a paediatrician and paediatric dietitian)

Formula	Indication	Notes
Infatrini (Nutricia)	Faltering weight	• 1kcal/ml
SMA High Energy	Faltering Weight	• 1kcal/ml, partially hydrolysed milk protein suitable to use in malabsorption
Infatrini Peptisorb (Nutricia)	Faltering Growth / Malabsorprtion	• 1kcal/ml, extensively hydrolysed milk protein. Suitable to use in malabsorption and cow's milk protein allergy

5. Preterm (<37 weeks gestation) and low birth-weight (<2500g) infants

Choice of Infant formula

<table>
<tr><th>Royal Derby Hospitals</th><th>Chesterfield Royal Hospital (CRHFT)</th></tr>
<tr><td>
In infants who are not breast-fed, or where supplementation to breast-feeding is required, Nutriprem 1 will be initiated by RDH. This will be continued until the infant reaches 1800g. Infants discharged on Nutriprem 1 will continue to receive supplies from Neonatal Intensive Care Unit.

When the infant reaches 1800g, the formula will be switched to Nutriprem 2. Infants will receive ready-made formula in hospital. However, 800g tins of Nutriprem 2 powder are suitable for prescribing on discharge and in the community.

Infants might be changed to standard infant formula before 6 months if their growth is assessed as optimal. Once Nutriprem 2 is stopped, parents are advised to purchase normal formula.
N.b. Nutriprem 2 should not be prescribed beyond 6 months corrected age*.

Infants who are not gaining adequate weight to maintain their centile will be referred to a paediatric dietitian for assessment and advice on appropriate formula. The dietitian might recommend a prescribable product.

Weights are plotted on individual UK WHO growth charts. On discharge, each family will be given written information on feeding their premature baby.

A family care co-ordinator will take on the responsibility for supporting the family; advise on frequency of weighing/monitoring and ensuring the infant is gaining weight appropriately. They will liaise with the paediatric dietitian or paediatrician responsible for the infant's care if there are any concerns. They will also liaise with the health visitor and GP.
</td><td>
CRHFT follows the feeding guidelines from the North Trent Neonatal Network.

Mothers are encouraged to breastfeed or express breastmilk (EBM) and fortification is used when birthweight is low or growth is poor.

EBM may be fortified in hospital with powdered breastmilk fortifiers. e.g. SMA Breastmilk Fortifier or Cow & Gate Nutriprem Human milk Fortifier. These are not available on prescription in primary care.

For mothers who wish to continue breastfeeding or expressing, but their infant's weight gain is poor, every effort will be made to find suitable alternative methods of EBM fortification in the community, the assistance of a paediatric dietitian is recommended. Refer to infant feeding specialist/lead.

If mothers are unable to breastfeed or express, a first stage preterm formula is used. Examples include
<table>
<tr><th>Formula</th><th>Notes</th></tr>
<tr><td>SMA Gold Prem Pro</td><td rowspan="3">Ready to use 70ml bottles</td></tr>
<tr><td>Cow and Gate Nutriprem 1 Low Birthweight</td></tr>
<tr><td>Aptamil Preterm</td></tr>
</table>
Upon discharge, or once the infant reaches 2000g in weight, they should be changed to a second stage preterm formula
<table>
<tr><th>Formula</th><th>Notes</th></tr>
<tr><td>SMA Gold Prem 2 Catch-up</td><td>400g tins of powder</td></tr>
<tr><td>Cow and Gate Nutriprem 2</td><td>800g tins of powder or 200ml ready to feed cartons</td></tr>
</table>
</td></tr>
</table>

*Corrected age = actual age adjusted by number of weeks child was born before 40 weeks gestation (Expected Delivery Date).

NOTE: Powder feeds should be used routinely. Liquid feeds should only be used in community when advised by the neonatal unit, e.g. for immunocompromised patients. Health visitors should give advice about appropriate reconstitution and sterilisation to avoid contamination. See also advice in Birth to Five (DH 2016).

Further information on donor human milk https://heartsmilkbank.org/

Supplementation

Royal Derby Hospitals

For infants born at <34 weeks gestation

	Vitamin & iron supplement
Breast-fed infants	14 drops (0.6ml) Abidec daily 1ml sodium feredetate (iron 27.5mg/5ml) oral solution sugar free daily commenced at 4 weeks of age. Continue until 1 year corrected age (ie 1 year from EDD)
Breast milk supplemented with Nutriprem 2 or Normal infant formula	7 drops (0.3ml) Abidec daily 1ml sodium feredetate (iron 27.5mg/5ml) oral solution sugar free daily commenced at 4 weeks of age. Continue until 1 year corrected age (ie 1 year from EDD)
Nutriprem 1 or 2 as sole source of nutrition	no supplementation required (intake approximately 120ml/kg/day to 165ml/kg/day)

Chesterfield Royal Hospital (CRHFT)

Prescribe supplementation for premature/ low birth weight infants until 1 year of age, and then these can be purchased by parents over-the-counter.

Feed	**Birth Weight**	**Supplements & Vitamins**
Breastfed or Expressed Breastmilk (EBM)	< 2500g (LBW)	14 drops (0.6 ml) Abidec daily until 5 year of age* 1ml sodium feredetate (iron 27.5mg/5ml) oral solution sugar free daily until 6 months corrected age commenced at 28 days of age
Breastfed exclusively	> 2500g	7 drops (0.3 ml) Abidec daily until 18 months of age (*ideally mother should have been taking vitamin D throughout pregnancy*) Then from this age, all children who are not on 500ml formula require vitamin A and D supplementation until age 5 years* (use Healthy Start, Abidec or Dalivit)
Formula Fed (on standard OTC formula)	< 2500g (LBW)	7 drops (0.3 ml) Abidec od until 1 year of age Then from this age, all children who are not on 500ml formula require vitamin A and D supplementation until age 5 years* (use Healthy Start, Abidec or Dalivit) 1ml sodium feredetate (iron 27.5mg/5ml) oral solution sugar free od until 6 months corrected age commenced at 28 days of age
Preterm Formula >150 ml/kg	<1000g (ELBW)	No supplementation until on term formula (see above)

*It is recommended by Public Health England that all children aged 5 years and above should continue to take 10microg of vitamin D daily. These supplements are available to buy over-the-counter.

For babies receiving combined milk i.e. EBM + pre-term/high calorific formula:

- No Vitamin supplementation is required if the total feed is 1/2 formula or more
- Vitamin supplementation as per above regime is required for infants receiving ¼ of total feed as formula

Notes:

- Dalivit contains more vitamin A and not licensed for use in children under 6 weeks, hence Abidec preferred in infancy to avoid Vitamin A toxicity.
- Abidec should be only avoided in cases of confirmed anaphylaxis to peanut.

Appendix 1: Summary of Common Conditions requiring the use of infant formula in primary care

Condition	Information	Signs/symptoms	Diagnosis and Referral	Usual Treatment
Primary lactose intolerance	Doesn't usually present until later childhood or adult life due to losing the ability to produce lactase.	Abdominal bloating Increased (explosive) wind Frothy, loose stools (perianal soreness)	Lactose intolerance should be suspected in children who have had symptoms that persist for more than 2 weeks. (Infectious diarrhoea in children can persist for up to 2 weeks.) The **criterion for diagnosis** is the resolution of symptoms, usually within 48 hours, when lactose is removed from the diet. **Refer all suspected Primary Lactose Intolerance cases and any cases of Secondary Lactose Intolerance where there is significant weight loss or no improvement after withdrawal of lactose.**	Lactose-free formula Advice on dailry-free diet Treat secondary lactose intolerance in primary care with OTC lactose-free formula and lactose-free diet. Rechallenge in 3-6 months
Secondary lactose intolerance	More common than primary lactose intolerance and occurs following an infectious gastrointestinal illness. Lactose intolerance can also co-exist with other conditions that damage the small bowel mucosa, like coeliac disease.			
Cow's milk (protein) allergy	**Breastfed infants** Exclusively breastfed infants can have CMA (although it is rare), due to proteins passing through the breast milk. Exclusive breast feeding for at least 4 months may be protective, as far fewer infants in this group will go on to get CMA. Standard infant formula milks are made from cow's milk. Symptoms of cow's milk protein allergy in infancy are common but Less than 2% of UK infants have CPA.	**Non-IgE mediated** • Pruritus • Erythema • Atopic eczema • GORD • Loose or frequent stools • Blood and/or mucus in stools • Abdominal pain • Infantile colic • Food refusal or aversion or feeding difficulties • Constipation • Perianal redness • Pallor and fatigue • Faltering growth in conjunction with GI symptoms above (± significant atopic eczema) **IgE mediated** • Pruritus • Erythema • Acute angioedema or urticaria • Angioedema of the lips, tongue and palate • Oral pruritus • Nausea, vomiting • Colicky abdominal pain • Diarrhoea • nasal itching, sneezing, rhinorrhoea or congestion • cough, chest tightness, wheezing or SOB • anaphylaxis or other systemic allergic reactions	Suspect after careful history taking of symptoms and their association with the introduction of cow's milk into the diet. **Non-IgE mediated CMA (mild to moderate)** Trial cow's milk elimination. If the symptoms improve after 2 weeks on the elimination of cow's milk CMA may be suspected. **In order to avoid over diagnosis, as per the Milk Allergy in Primary Care (MAP) Guidance, after 2-4 weeks on prescribed formula or maternal dairy exclusion, normal formula is to be reintroduced, or mother to revert to normal diet to see if symptoms return, thus proving/disproving the CMA diagnosis.** **IgE CMA** Infants with suspected IgE-mediated reactions to cow's milk should be advised to adopt a strict cow's milk free diet to manage symptoms. **Unlike non-IgE CMPA, these infants should not be challenged with cow's milk in order to confirm their diagnosis.** Infants presenting with immediate hypersensitivity symptoms ie. Urticaria, angio-oedema, acute flare of atopic dermatitis and vomiting are more likely to have IgE mediated CMPI. In these infants, cow's milk protein challenges should be done under specialist supervision. **Refer all cases of Cow's Milk Allergy.** All infants with suspected IgE CMA should be referred to the allergy clinic at either Derbyshire Children Hospital (via choose and book) or Chesterfield Royal Hospital for practical advice on allergy management, interpretation of the IgE allergy tests, nutritional advice, future re-challenge advice and long-term prescription requirements Southern Derbyshire- infants with Non-IgE milk allergy can be managed using local pathway (appendix 2) North Derbyshire- infants with suspected or confirmed Non-IgE CMA can be referred to the paediatric dietitians at Chesterfield Royal Hospital as per iMAP guidance. (appendix 3 & 4)	**Breastfed infants** Mothers should be encouraged to continue to breast feed whilst following a cow's milk free diet with calcium and vitamin D supplementation. **Formula fed infants** Advice on CMP-free diet and CMP-free specialist formula **Non-IgE mediated CMA** Re-challenge after at least 6 months on specialist formula as advised by consultant/ paediatric dietician. Children can be rechallenged (often at home) from 9-12 months of age. Most children will grow out of their intolerance by 18mths to 2 years of age. **IgE mediated CMA** Follow advise given by allergy clinic and paediatric dietician.

Appendix 2

GP Patient Pathway for Infants under 1 year of age with Cows Milk Protein Allergy (Non-IgE Mediated)

Note: Cows Milk Protein Allergy now includes those previously described as having *Cows Milk Protein Intolerance*

Infant suspected with CMA (Non-IgE) after an allergy focused clinical history has been completed.
Start milk elimination trial

- Breastfed infant- mum will require a milk free diet (mum might also require calcium and Vitamin D supplement).
- Start a hydrolysed infant formula and milk free diet if appropriate

Refer to p.5 &6 for infant formula choice and further guidance.

Refer directly to consultant paediatrician if infant has:
- severe faltering growth
- severe reflux
- unclear presentation

Refer to Paediatric Allergy clinic if:
- multiple food allergy
- anaphylactic reaction
- Significant IgE mediated symptoms

If the symptoms improve after 2 weeks on the elimination of cow's milk CMA may be suspected.

Mild to moderate IgE CMA- to confirm diagnosis, after 2-4 weeks on prescribed formula or maternal dairy exclusion, normal formula is to be reintroduced, or mother to revert to normal diet to see if symptoms return. See appendix 5

Consider referring to paediatrician if symptoms do not fully resolve

GP to complete Referral pro-forma to Paediatric Dietetics

Specialist Paediatric Dietitian (RDH) to assess pro-forma

Dietitian

Diagnosis confirmed and/or no medical concerns

Dietetic Telephone review

Milk free Group Education *

Telephone review at one year old* and discharge if appropriate

Telephone review at 14 -18 months old (if required) and Discharge back to GP*

Complex History and Diagnosis or not fully responded to hydrolysed cows milk free infant formula

Requires Consultant Paediatrician assessment

Consultant Paediatrician appointment

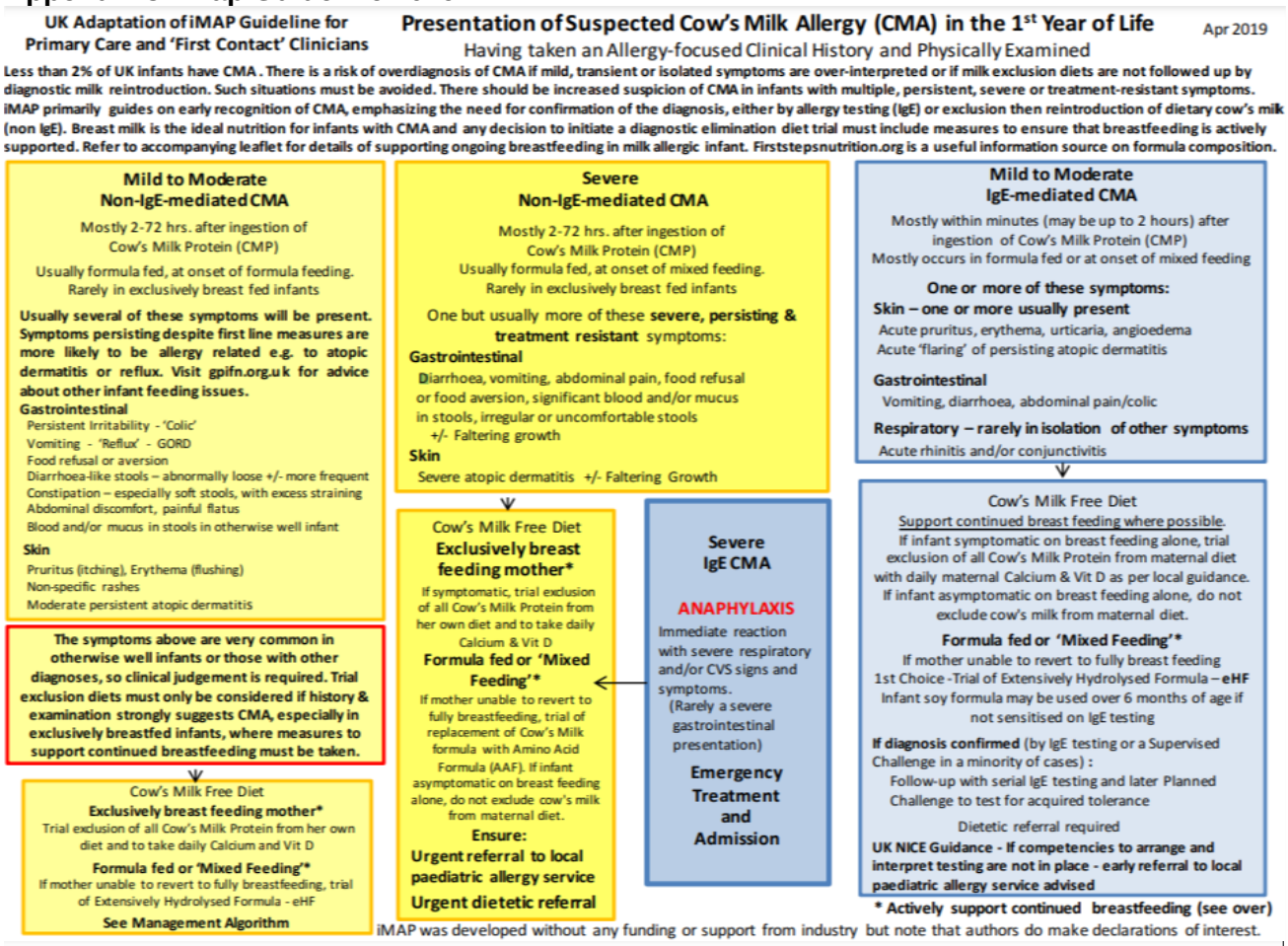
Ongoing consultant paediatrician hospital care with dietetic support if required

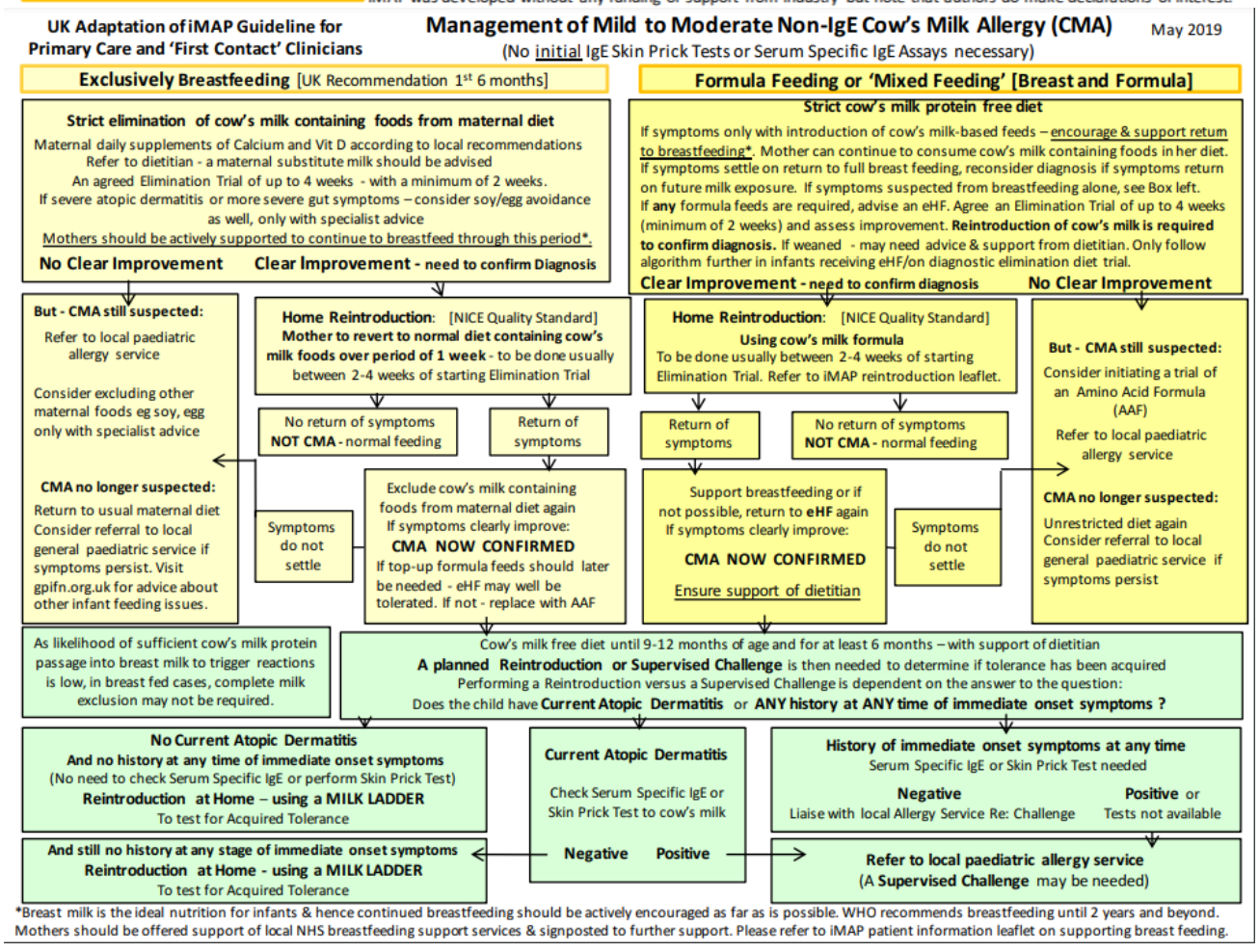
Refer back to GP/Health Visitor for advice
e.g. Lactose intolerance, overfeeding, mild reflux, colic, general infant feeding advice

Note* Dietitian can refer back to consultant paediatrician at any point in pathway

THIS PATHWAY SHOULD BE USED IN CONJUNCTION WITH THE GUIDANCE ON THE APPROPRIATE USE AND PRESCRIBING OF SPECIALIST INFANT FORMULA IN PRIMARY CARE

Appendix 3: iMap Guideline 2019





Appendix 4: CHESTERFIELD ROYAL HOSPITAL AND DERBYSHIRE COMMUNITY HEALTH SERVICES – NORTH DERBYSHIRE

Nutrition and Dietetic Service Referral Form

Patient Details:

Surname: Address:

Forename(s):

DOB: Postcode:

NHS No: Tel no:

Reason For Referral (Please tick reason for referral):

Nutrition Support	Type 1 Diabetes	Obesity	□	Eating Disorder *	□
Coeliac Disease	Type 2 Diabetes	IBS	□	Other Gastro *	□
Food Allergy / Intolerance *	Type 2 Diabetes on Insulin	Vitamin/ Mineral Advice *	□	Faltering Growth	□
Other *	*** Please give diagnosis/further information:**				

Diagnosis & Past Medical History:

Relevant Social History:

Details of other health professionals/family involved:

Weight: Height: BMI: MUST Score:

Unable to weigh: □ **Please state why unable to weigh:** _____

If weight and MUST score details not completed we will not be able to accept this referral for nutrition support patients

PLEASE INDICATE WHERE YOU WOULD LIKE THE PATIENT TO BE SEEN (Please circle)

Hospital / Outpatient / Care Home / Own Home (if house bound)

If patient is in hospital, please indicate which hospital and ward:

If patient is to be seen at home, please indicate additional information which may be required (e.g. house entry key code number, need to have family member / carer present, family contact number):

GP DETAILS Name:

Surgery:

Tel No:

CONSULTANT DETAILS: Name: (if appropriate)

Base:

REFERRERS DETAILS (Please Print)

Name - printed: Signature:

Job Title: Date:

Base: Tel No:

Appendix 5: The Early Home Reintroduction to Confirm the Diagnosis of Cow's Milk Allergy, iMAP Guideline (Link)

The Early Home Reintroduction to Confirm the Diagnosis of Cow's Milk Allergy

iMAP GUIDELINE

Practical Pointers for Parents/ Carers on how to carry out the:

iMAP Home Reintroduction to **Confirm** or **Exclude** the Diagnosis of Mild-to-Moderate Non-IgE Cow's Milk Allergy

After an agreed period of cow's milk protein exclusion has resulted in a clear improvement in symptoms

A carefully planned home reintroduction of cow's milk protein is still needed to either confirm or exclude the diagnosis of cow's milk allergy because any clear improvement in your baby's symptoms could be due to other factors.

1. DO NOT start the Reintroduction if your child is unwell: e.g. Any respiratory or breathing problems (this includes a common cold)
   Any tummy or bowel symptoms
   Any 'teething' symptoms which are thought to be unsettling your child
   If your child has eczema -
   any current flare-up of the eczema
2. DO NOT start the Reintroduction if your child is receiving any medication that may upset the bowels, such as a course of antibiotics
3. DO NOT stop any medication that your baby may be on, e.g. reflux medicine
4. DO NOT introduce any other new foods during the Reintroduction.
5. Keep a record of what your child eats and drinks during the reintroduction and record any possible symptoms such as, vomiting, bowel changes, rashes or changes in their eczema

The Home Reintroduction

How you carry out the Reintroduction depends on whether you are giving any formula milk or are fully breast feeding.

Formula Fed Child (those taking only formula feeds or taking formula as well as breast feeds)

Each day gradually increase the amount of cow's milk formula only in the FIRST bottle of the day (as set out in the example below). For the rest of the day, all the remaining bottles will continue to be made up only with the special low allergy (hypoallergenic) formula. If you are also breast feeding and on a milk free diet yourself, start eating products containing milk again, e.g milk, cheese and yoghurt.

If the symptoms return, **STOP** the Reintroduction. Give only the prescribed formula again and inform your doctor or dietitian. Your child's symptoms should settle again within a few days and the diagnosis of cow's milk allergy is now confirmed.

If no symptoms occur after day 7, when you have replaced the 1st bottle of the day completely with cow's milk formula, give your child cow's mik formula in all bottles

If no symptoms occur within 2 weeks of your child having more than 200mls. (almost 7 fl. oz.) of cow's milk formula per day, your child does not have cow's milk allergy.

A Practical Example of a Reintroduction in a Formula Fed Child

The Days	Volume of Boiled Water mls. (fl. oz.)	Hypoallergenic Formula mls. (fl. oz.)	Cow's Milk Formula mls. (fl. oz.)
Day 1	210 mls. (7 fl.oz.)	180 mls. (6 fl.oz.) in 1st bottle **only**	30 mls. (1 fl.oz.) in 1st bottle **only**
Day 2	210 mls. (7 fl.oz.)	150 mls. (5 fl.oz.) in 1st bottle	60 mls. (2 fl.oz.) in 1st bottle
Day 3	210 mls. (7 fl.oz.)	120 mls. (4 fl.oz.) in 1st bottle	90 mls. (3 fl.oz.) in 1st bottle
Day 4	210 mls. (7 fl.oz.)	90 mls. (3 fl.oz.) in 1st bottle.	120 mls. (4 fl.oz.) in 1st bottle
Day 5	210 mls. (7 fl.oz.)	60 mls. (2 fl.oz.) in 1st bottle	150 mls. (5 fl.oz.) in 1st bottle
Day 6	210 mls. (7 fl.oz.)	30 mls. (1 fl.oz.) in 1st bottle	180 mls. (6 fl.oz.) in 1st bottle
Day 7	210 mls. (7 fl.oz.)	0	210 mls. (7 fl.oz.) in 1st bottle
If no symptoms occur after Day 7, when you have replaced the 1st bottle of the day completely with cow's milk formula, give your child cow's mik formula in all bottles.			

Fully Breast Fed Child

Simply reintroduce cow's milk and cow's milk containing foods into your own diet over a 1 week period.

If the symptoms return, **STOP** the Reintroduction, return to your full milk exclusion diet and inform your doctor or dietitian. Your child's symptoms should settle again within a few days and the diagnosis of cow's milk allergy is now confirmed.

If no symptoms occur, you can continue to drink cow's milk and eat cow's milk containing products, e.g. cheese and yoghurt. Your child does not have cow's milk allergy.

In a few children possible symptoms of cow's milk allergy may appear later when larger amounts of cow's milk protein come to be introduced into the child's diet, either when formula milk is introduced or on weaning when milk containing products or plain milk is introduced. Should this happen contact your doctor or dietitian.

Adapted from: Clinical and Translational Allergy 2013, 3:23

Appendix 6 Approximate quantities to be supplied per month

The table below gives an approximate indication of the number of tins to be supplied per month. This information would usually be included in the letter from the paediatric dietitian to the GP.

Age	No. of tins (using 400g tins)	Quantity in grams
0 to 3 months	6 to 11 tins	2,400- 4,400 g
4 to 6 months	Up to 14 tins	Up to 5,600 g
7 to 9 months	9 to 11 tins	3,600- 4,400 g
10 to 12 months	8 tins	3,200 g