

Additional file 1:

Home challenge or hospital challenge to confirm the diagnosis of cow's milk allergy (i.e. after a short period of milk exclusion usually 2-4 weeks)

1. DO NOT challenge if the infant is unwell; if airways are compromised or if eczema is flared up.
2. DO NOT challenge if the infant is receiving medication that may adversely affect the gut such as a course of antibiotics.
3. DO NOT introduce any other new foods during the milk challenge.
4. It may be helpful to ask the parents to keep a record of the infant's oral intake, stool pattern and symptoms during the challenge.
5. DO introduce the new food early in the day to allow the parents to observe any symptoms during daytime.
6. If symptoms return, STOP the Challenge and seek medical advice if necessary.
7. Infants who react during the Home Challenge, should be referred to a Paediatric/Allergy Dietitian or Paediatrician/Allergist for a full dietary assessment and on-going support

a) Cow's milk challenge for formula fed infants for an initial diagnosis of cow's milk allergy

Include infants who are fully bottle fed or taking formula to complement breastfeeds

Day 1 30mls of Cow's milk formula into ONE morning bottle only – i.e. 30 mls (1 scoop) cow's milk + 180 mls (6 scoops) formula.

Days 2 – 7 Continue to increase the cow's milk formula IN the ONE morning bottle and reduce the Hypoallergenic formula using the following example.

Following Days	Volume of Boiled Water (mls)	Cow's Milk Formula No. of Scoops	Hypoallergenic Formula No. of Scoops
Day 2	210	2	5
Day 3	210	3	4
Day 4	210	4	3
Day 5	210	5	2
Day 6	210	6	1
Day 7	210	7	0

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If no symptoms occur after replacing one bottle with cow's milk formula, the infant may continue to consume cow's milk formula in all bottles and consume milk containing products. If no symptoms occur within 2 weeks of consuming more than 200 mls cow's milk formula per day, then the infant does not have cow's milk allergy.

b) Cow's milk challenge for exclusively breast fed infants for an initial diagnosis of cow's milk allergy

Simply advise the mother to reintroduce cow's milk and milk containing foods gradually back into her own diet over a 1 week period.

If no symptoms return within 2 weeks of the mother consuming milk products then the infant does not have cow's milk allergy and the mother may continue to consume cow's milk and milk containing products.

Home reintroduction to confirm the Clinical Remission/Persistence of Cow's Milk allergy (i.e. after a longer period of milk exclusion) also referred to as the Milk Ladder.

If the child has additional confirmed or suspected food allergies, be careful to choose a safe challenge food.

The Paediatric/Allergy Dietitian can give individualised directions for moving through the stages of the home challenge.

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2. DO NOT challenge if the infant is receiving medication that may adversely affect the gut such as, a course of antibiotics.
3. DO NOT introduce any other new foods during the milk challenge.
4. It may be helpful to ask the parents to keep a record of the infant's oral intake, stool pattern and symptoms during the challenge.
5. DO introduce the new food early in the day to allow the parents to observe any symptoms during daytime.
6. If symptoms return, STOP the Challenge and seek medical advice if necessary.

Guidance in using the Milk Ladder:

- Most children/infants will start at step one of the Ladder. However, some children/infants might have consumed some of the foods on the “ladder” already and would therefore not need to start at step one of the ladder.
- Each step of the ladder can be conducted over any length of time (for example one day or one week) as indicated by the dietitian/physician. The duration of each step will be based on the characteristics of each individual case.
- In some cases the dietitian/clinician may prefer to start the ladder with smaller quantities than we suggested e.g. $\frac{1}{4}$ malted milk biscuit or $\frac{1}{2}$ malted milk biscuit
- If the food in a certain “step” of the ladder is tolerated, we advise that you keep the milk in your child/infant’s diet and then try the food suggested in the next step.
- For each “step” in the ladder we have provided a commercially available option and a home-made option. This gives mothers the option to choose what they would like to give to their children and to adjust the texture to the developmental milestones of the child/infant (e.g. the pasta dishes can be mashed up for younger children or the milk containing biscuits mashed up with the tolerated formula). The ladder can also alternate between commercial and home-made options e.g. buy the biscuits but bake the muffins.
- Each of the recipes have an egg and wheat free option (they are all soya free) to make the ladder suitable for children with other co-existing allergies. – see suggested milk ladder below
- It is important to understand that tolerance to milk containing foods relates only to foods tolerated on the ladder. E.g. if a child reacts to milk chocolate, then consumption of biscuits, cakes, pancakes, baked milk dishes and pizza should be safe and should be eaten regularly in the diet. Foods such as chocolate, yoghurt, cheese and milk should be avoided in this particular case.

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Step	Food	Amount	Recipe alternative
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1	Malted milk biscuits – we recommend to look out for malted milk biscuits that contain milk powder rather than whey powder	1 Malted milk biscuit 2 Malted milk biscuits	<i>Home-made recipe: ¼ biscuit</i> <i>Home-made recipe: ½ biscuit</i>
2	Garibaldi biscuits/Digestives (do check that they contain MILK)	½ biscuit 1 biscuit	<i>Home-made recipe: 1 biscuit</i> <i>Home-made recipe: 2 biscuits</i>
3	Mini muffins/cup cakes	½ muffin/cup cake (15g) 1 Muffin (30 g)	<i>Home made recipe: ½ muffin</i> <i>Home made recipe: 1 muffin</i> SEE INFORMATION FOR BAKED MILK CHALLENGES UNDER RECIPE FOR MINI MUFFIN/CUPCAKE
	<i>Note that Scotch Pancakes contain LESS milk than muffins but it is baked for a much shorter time</i>		
4	Scotch pancakes – it is recommended to look out for Scotch pancakes containing milk protein rather than whey powder	1 Scotch Pancake 3 Scotch pancakes	<i>Home-made recipe: ½ scotch pancake</i> <i>Home made recipe: 2 Scotch pancakes</i>
5	Shepherds Pie	Shepherds Pie (200 g)	<i>Home-made recipe: 1 child’s portion</i>
6	Lasagne	Lasagne (200 g)	<i>Home made recipe: 1 child’s portion</i>
7	Pizza – we recommend that a pizza is chosen that does not contain milk in the base	½ Mini Pizza 1 Mini Pizza	<i>½ Home-made pizza</i> <i>1 Home-made pizza</i>
8	Milk chocolate	10 g Chocolate Milk choc buttons (1/2 bag or 35 g)	10 g Chocolate Milk choc buttons (1/2 bag or 35 g)
9	Yoghurt	1 pot yoghurt (125 ml)	1 pot yoghurt (125 ml)
10	Cheese – for example Cheddar or Mozzarella	25 g cheese	25 g cheese
11	Sterilised milk/Infant formula (tetra packs)	100 mls 200 mls	100 mls 200 mls
12	Pasteurised milk/Infant formula (powder)	100 mls 200 mls	100 mls 200 mls

This milk ladder was produced based on information of commercial products in the UK. The information was correct at the time of submission for publication (April 2013).