

## Using the Milk Ladder to re-introduce milk and dairy

---

This leaflet explains what the 'Milk Ladder' is and how to use it.

---

### What is the Milk Ladder?

The Milk Ladder is an evidence-based guideline for the home reintroduction of milk and dairy products into the diets of infants and children with mild to moderate cow's milk allergy.

It is a plan to re-introduce milk products gradually and in stages, starting with foods that contain only a small amount of well-cooked milk and progressing towards un-cooked dairy products and fresh milk. It is called the 'Milk Ladder' because completing each of the 6 steps in the plan is like climbing a rung on a ladder towards being able to fully tolerate milk and dairy products

### Who should use the Milk Ladder?

The Milk Ladder can only be followed by infants and children with a mild to moderate cow's milk allergy known as a 'non-IgE mediated' milk allergy.

It is not suitable for children with a milk allergy that results in severe or immediate type allergic reactions known as an 'IgE mediated' milk allergy.

### When should the Milk Ladder be started?

Parents should only start using the Milk Ladder when advised to do so by their child's doctor or paediatric dietitian. Normally, the Milk Ladder is only started once your child has been on a milk-free diet for at least 6 months and they are completely well with no active eczema or gastro-intestinal symptoms.

### How do I start using the Milk Ladder?

Your doctor or dietitian will advise which step of the Milk Ladder to start on. Most children will start by trying the foods in Step 1, but if your child is already having some milk products in their diet then you may be advised to start at a later step on the Ladder. Each of the 6 steps on the Milk Ladder lists foods that contain milk and suggests how much you give your child to eat on any given day. The suggested amounts are a guideline only and you may be advised to give your child a smaller or larger amount.

### Do I have to use the foods listed in steps on the Milk Ladder?

No, you can discuss alternative foods with your child's paediatric dietitian. The foods on

the Milk Ladder have been selected because of the type and quantity of cow's milk protein they contain. The aim is that your child will increase their exposure to milk by completing each step of the Milk Ladder and build up their tolerance gradually.

Each of the early steps of the ladder are accompanied by the appropriate recipe (see recipes). Each of the recipes has an egg and wheat-free option (they are all soya free) to make the ladder suitable for children who may have other co-existing food allergies.

### How long does it take to complete each step of the Milk Ladder?

Your child will only be able to move on to the next step on the Milk Ladder once they are fully tolerating the milk containing food in the step they are on. This means that they have been able to eat the food more than once, in the quantities suggested on the Milk Ladder and do not suffer any allergic reactions as a result.

Sometimes, it can take up to 2 or 3 days for allergy symptoms to appear after eating a food. Therefore, it is advisable to allow at least 3 days on a step before considering whether to move on to the next step of the Milk Ladder.

### How will I know if my child has reacted to foods on the Milk Ladder?

The symptoms of an allergic reaction can include reflux or vomiting, tummy pain or bloating, diarrhoea or constipation, eczema or other skin rashes, wheezing, swelling of the lips or face or irritation to the eyes or nose. Please note that your child may not react to milk in the same way that they did when they were first diagnosed with a cow's milk allergy. If you are unsure whether your child has reacted to a food containing milk or not, wait a day or two and then re-try the same food. If they are still allergic to milk, then the same reaction will happen again.

If your child experiences a severe or immediate type allergic reaction that occurs within a few minutes or hours after eating the food, then please discuss with your doctor or dietitian before re-trying that step of that Milk Ladder. Any allergic reactions that affect breathing or result in collapse should be treated as a medical emergency dialing 999.

### What should I do if my child reacts to foods on any step of the Milk Ladder?

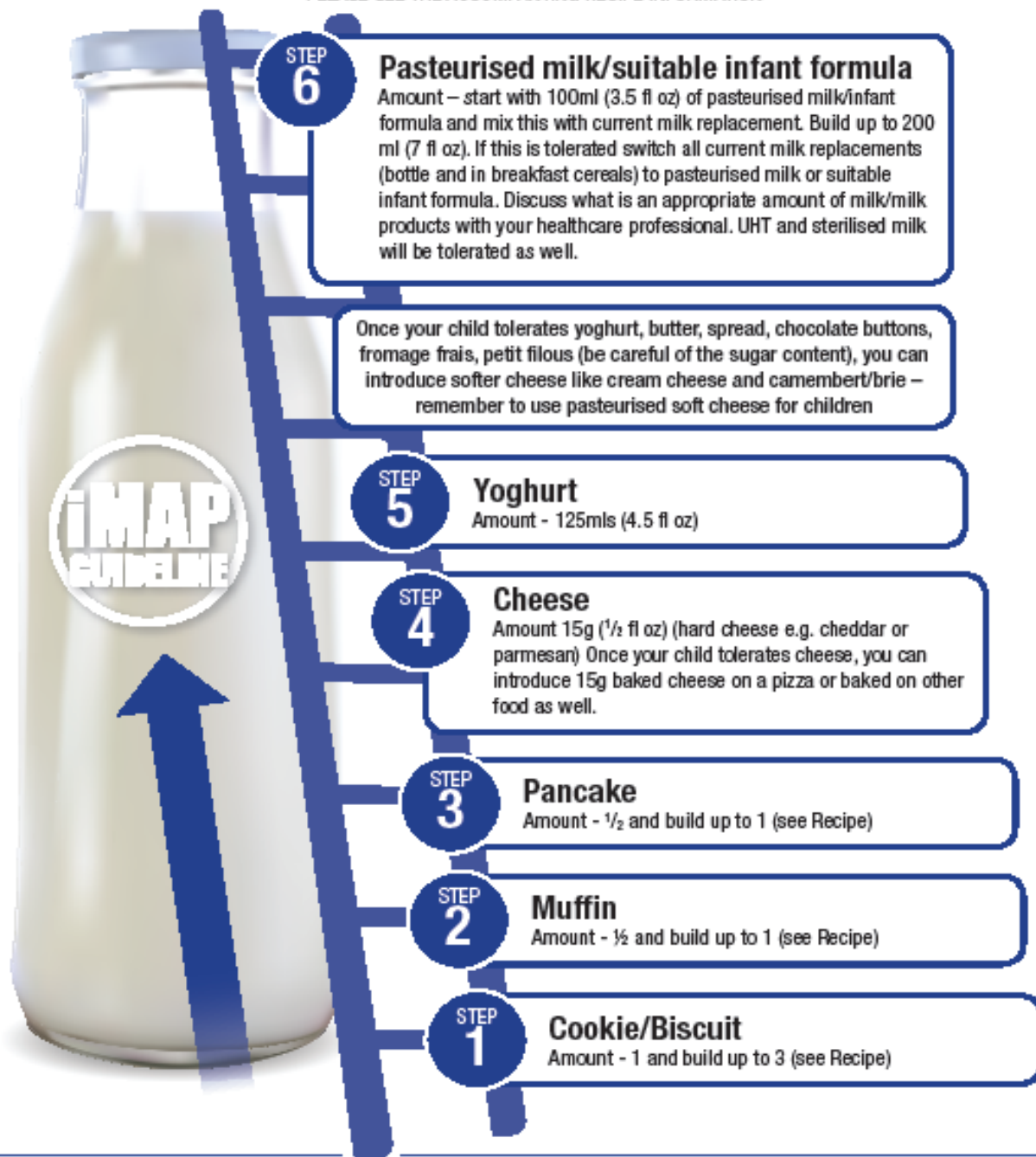
Stop giving the foods on that step to your child. You should continue to give your child the foods on any previous steps of the Milk Ladder that they have successfully introduced into their diet as this will help to maintain their tolerance. Your child's doctor or dietitian can advise on when to re-try the next step of the Milk Ladder. This may be between 3 and 6 months depending on how severe the reaction was.

### What should I do if my child is tolerating the foods on any step on the Milk Ladder?

Continue to give these foods to your child regularly, as well as the foods from previous steps on the Milk Ladder that they have successfully introduced into their diet. When you are ready you can try the food suggested on the next step of the Milk Ladder.

# THE iMAP MILK LADDER

To be used only in children with Mild to Moderate Non-IgE Cow's Milk Allergy  
Under the supervision of a healthcare professional  
PLEASE SEE THE ACCOMPANYING RECIPE INFORMATION



## AT EACH OF THE FOLLOWING STEPS

### Cookie, muffin, pancake, cheese and yoghurt

It may be advisable in some cases to start with a ¼ or a ½ of that particular food and then over a few days to gradually build up to a whole portion - Please ask your healthcare professional for guidance on this

**THE LOWER STEPS ARE DESIGNED TO BE USED WITH HOME MADE RECIPES. THIS IS TO ENSURE THAT EACH STEP HAS THE APPROPRIATE MILK INTAKE. THE RECIPES WILL BE PROVIDED BY YOUR HEALTHCARE PROFESSIONAL**  
Should you wish to consider locally available store-bought alternatives - seek the advice of your healthcare professional Re: availability

October 2016

Additional File 4		iMAP Milk Ladder Recipes					
STEP 1: COOKIE OR BISCUIT – SWEET/PLAIN							
Recipe	tsp/tbsp/ cup	g/ml	oz/lb	Ingredient	Milk per portion (ml)	Milk protein per portion	Temperature
<i>1 cookie/biscuit</i>					<i>1ml</i>	<i>0.3g</i>	
<b>Bakes 20 small finger size biscuits/cookies</b>	1 cup	125g	4.5oz	Flour (wheat or wheat-free)			180°C or 350°F  Bake for 10 – 15 min depending on size of cookie/biscuit  Practical tip – let dough cool in fridge for 30 min – which makes it easier handle
	¼ teaspoon	1g		Xanthan gum – if wheat-free flour is used			
	¼ cup	50g	1¾oz	Cold dairy free spread			
	¼-½ cup (may vary depending on fruit)			Grated apple/pear/pureed banana			
	1 teaspoon	2g		Skimmed/non-fat milk powder*			
	Tip of a knife			Vanilla powder			
<ol style="list-style-type: none"> <li>Mix the flour, xanthan gum and milk powder</li> <li>Rub in the cold dairy free spread</li> <li>Mix in the fruit (you may need to add a little bit more if it is too dry) and vanilla powder</li> <li>Roll out and cut in finger sized strips</li> <li>Bake in the oven</li> </ol>							
Start with 1 cookie/biscuit (equivalent to 1 ml of milk); increase to 2 and then 3 cookies/biscuits (equivalent to 3ml of milk - if child can manage a portion of 3 biscuits/cookies)					<i>3ml</i>	<i>0.105g</i>	180°C or 350°F

STEP 1: COOKIE OR BISCUIT – SAVOURY							
Recipe	tsp/tbsp/cup	g/ml	oz/lb	Ingredient	Milk per portion (ml)	Milk protein per portion	Temperature
<i>1 cookie/biscuit</i>					<i>1ml</i>	<i>0.035g</i>	
<b>Bakes 20 small finger size biscuits/cookies</b>	1 cup	125g	4 ½oz	Flour (wheat or wheat-free)			180°C or 350°F  Bake for 10-15 min depending on size of cookie/biscuit  Practical tip – let dough cool in fridge for 30 min – which makes it easier handle
	¼ teaspoon	1g		Xanthan gum – if wheat-free flour is used			
	¼ cup	50g	1¾oz	Cold dairy free spread			
	½ cup	40	1¼oz	Grated DAIRY FREE CHEESE			
	1 teaspoon	2g		Skimmed/non-fat milk powder*			
	2 tablespoon	10 ml		Water			
<ol style="list-style-type: none"> <li>Mix the flour, xanthan gum and milk powder</li> <li>Rub in the cold dairy free spread</li> <li>Mix in the grated DAIRY FREE CHEESE. Add water (you can add a bit more if it is too dry)</li> <li>Roll out and cut in finger sized strips</li> <li>Bake in the oven</li> </ol>							
Start with 1 cookie/biscuit (equivalent to 1 ml of milk); increase to 2 and then 3 cookies/biscuits (equivalent to 3mls of milk - if child can manage a portion of 3 biscuits/cookies)					<i>3ml</i>	<i>0.105g</i>	180°C or 350°F

STEP 2: MUFFIN – SWEET/PLAIN							
Recipe	tsp/tbsp /cup	g/ml	oz/lb	Ingredient	Milk per portion (ml)	Milk protein per portion	Temperature
Start with half a muffin and then one muffin: <i>half a muffin</i> : <i>one muffin</i>					12.5 ml 25 ml	0.0875 g 0.875 g	
<b>Bakes 10 muffins</b>	2 cups	250g	8oz	Flour (wheat or wheat-free)			180°C - 200°C or 350°F- 400°F  Bake for 15 – 20 mins Tip – use a whisk and milk and oil together. This makes the muffins light
	½ tsp	3g		Xanthan Gum – if wheat-free flour is used			
	2 ½ tsp	10g	1/3oz	Baking powder			
	2 level tbsp	25g	2/3oz	Sugar – if your child is older you can add 2-3 tablespoons			
	Pinch			Salt			
	¼ cup	50ml	1 2/3fl oz	Sunflower oil or Canola oil			
	1 cup	250 ml	8 fl oz	Milk**			
	½ cup and 1 tbsp	110g	3.9 oz	Finely chopped/ mashed fruit: apple/pear/banana			
	Vanilla essence to taste						
<ol style="list-style-type: none"> <li>Mix flour, xanthan gum, baking powder, sugar and salt</li> <li>Mix oil and milk together and to the dry ingredients</li> <li>Finally add in chopped fruit and vanilla (additional) and mix through</li> <li>Bake in oven</li> </ol>							
<b>1.5 muffin = equivalent to baked milk muffin from Mount Sinai Recipe(1) (which contains 1.3 g milk)</b>							

<b>STEP 2: MUFFIN – SAVOURY</b>							
<b>Recipe</b>	<b>tsp/tbsp /cup</b>	<b>g/ml</b>	<b>oz/lb</b>	<b>Ingredient</b>	<b>Milk per portion (ml)</b>	<b>Milk protein per portion</b>	<b>Temperature</b>
<i>Start with half a muffin and then one muffin: half a muffin : one muffin</i>					<i>12.5 ml 25 ml</i>	<i>0.0.875 g 0.875 g</i>	
<b>Bakes 10 muffins</b>	2 cups	250g	8oz	Flour (wheat or wheat-free)			180°C - 200°C or 350°F- 400°F  Bake for 15 – 20 mins Tip – use a whisk and milk and oil together. This makes the muffins light
	½ teaspoon	3g		Xanthan Gum – if wheat-free flour is used			
	2 ½ tsp	10g	1/3oz	Baking powder			
	Pinch			Salt			
	¼ cup	50ml	1 2/3 fl oz	Sunflower oil or Canola oil			
	1 cup	250ml	8 fl oz	Milk **			
	½ cup	60g	2oz	Grated DAIRY FREE CHEESE			
<ol style="list-style-type: none"> <li>Mix flour, xanthan gum, baking powder and salt</li> <li>Mix oil and milk together and to the dry ingredients</li> <li>Add DAIRY FREE CHEESE; Add a bit of water if required - Feel free to chop in a handful of spinach to add colour and fibre</li> <li>Bake in oven</li> </ol>							
<b>1.5 muffin = equivalent to baked milk muffin from Mount Sinai Hospital(1) (which contains 1.3 g milk)</b>							

<b>Step 3: PANCAKE</b>							
<b>Recipe</b>	<b>tsp/tbsp /cup</b>	<b>g/ml</b>	<b>oz/lb</b>	<b>Ingredient</b>	<b>Milk per portion (ml)</b>	<b>Milk protein per portion</b>	<b>Temperature</b>
<i>Start with half pancake and then 1 pancake as indicated below: half a pancake : one pancake</i>					21 ml 42 ml	0.735 g 1.47 g	
<b>Bakes 6 pancakes</b>	1 cup	125 g	4.5 oz	Flour (wheat or wheat-free)			Fry in a hot pan using oil of choice until golden brown and crispy
	2 ½ tsp	10 g	1/3 oz	Baking powder			
	¼ tsp	1-2 g	pinch	Salt			
	2 tbsp	30 ml	1 fl oz	Sunflower or Canola oil			
	1 cup	250 ml	8 fl oz	Milk**			
	2/3 cup	50 ml	1.5 fl oz	Water			
<ol style="list-style-type: none"> <li>1. Add all ingredients into a mixing bowl and mix together</li> <li>2. Fry in a hot pan</li> </ol>							
<p>Some children do not like cake or pancake textures: For these children there is the option of boiling a small potato, adding 42 ml of milk (1.3 g protein) and some milk free spread, cover with foil and bake in the oven for 40 minutes at 180°C - 200°C or 350°F- 400°F. This product does not contain any wheat in the food matrix and it may therefore affect the allergenicity.</p>							



<b>Step 4: CHEESE</b>							
<b>tsp/tbsp p/cup</b>	<b>g/ml</b>	<b>oz/lb</b>	<b>Ingredient</b>	<b>Milk per portion (ml)</b>	<b>Milk protein per portion</b>	<b>Temperature</b>	
2 ½ tbsp	15 g	½ oz	Cheese***	15 g	3.43 g	85°C or 185°F (no need to further heat this – just an indication of how cheese is made)	
<b>Step 5: YOGHURT</b>							
<b>Food</b>	<b>tsp/tbsp /cup</b>	<b>g/ml</b>	<b>oz/lb</b>	<b>Ingredient</b>	<b>Milk per portion (ml)</b>	<b>Milk protein per portion</b>	<b>Temperature</b>
<b>Yoghurt</b>	½ cup	125 ml	4.5 fl oz	Yoghurt	125 ml	6.0 g depending on brand	98°C (no need to further heat this – just an indication of how yoghurt is made)
Once your child tolerates yoghurt, butter, spread, chocolate buttons, fromage frais, petit filous (be careful of the sugar content), you can introduce softer cheese like cream cheese and camembert/brie – remember to use pasteurised soft cheese for children							
<b>Step 6: MILK</b>							
<b>Food</b>	<b>tsp/tbsp /cup</b>	<b>g/ml</b>	<b>oz/lb</b>	<b>Ingredient</b>	<b>Milk per portion (ml)</b>	<b>Milk protein per portion</b>	<b>Temperature</b>
<b>Pasteurised Milk</b>	⅔ cup	100 ml	3.5 fl oz	Pasteurised Milk**	100 ml	3.47 g	57-68°C 15-20 seconds Both pasteurised milk and infant formula is produced this way – there is no need to further heat this.
	¾ cup	200 ml	7 fl oz		200 ml	6.95 g	

## Contact us

If you have any queries, please contact the branch of the Dietetic Department your child is seen by on:

- Royal Berkshire Hospital Dietitians: 0118 322 7116
- East Berkshire Community Dietitians: 01753 636724
- West Berkshire Community Dietitians 01635 273710
- CYPIT East Berkshire Dietitians: 01753 635073
- CYPIT West Berkshire Dietitians: 0118 918 0571

## Further information

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 by Venter et al; Clin Transl Allergy. 2017 7:26 Available at:

<https://ctajournal.biomedcentral.com/articles/10.1186/s13601-017-0162-y> (accessed October 2017)

NICE: Cow's milk protein allergy in children, Clinical Knowledge Summaries, 2015.

Available on line: <https://cks.nice.org.uk/cows-milk-protein-allergy-in-children#!topicsummary> (accessed October 2017)

NICE. Diagnosis and assessment of food allergy in children and young people in primary care and community settings [Online]. 2011. Available on-line via: [www.nice.org.uk/CG116](http://www.nice.org.uk/CG116) [Accessed Sept 2013]

NICE: Food allergy, Quality standard [QS118], March 2016. Available at:

<https://www.nice.org.uk/guidance/qs118> (accessed October 2017)

This document can be made available in other languages and formats upon request.

Produced by Berkshire Healthcare Foundation Trust Dietitians, November 2017

Review due: November 2019