



Children's Health Ireland
at Temple Street

Metabolic.ie

National Centre for Inherited Metabolic Disorders

WEANING YOUR BABY ON A MMA DIET



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Introduction

Weaning is the process of gradually introducing solid food into your baby's diet. Weaning in MMA is similar to weaning on a normal diet. The overall aim is to have your baby join you at the table for family meal times.

Weaning is a time during which your baby will learn important skills. These include self feeding and development of muscles that are important for speech.

Weaning can be a busy and challenging time for parents. Our team of dietitians are here to support you along the way. This can be discussed on a regular basis when calling for blood/urine levels and during appointments.



When to Begin

Weaning should begin when your baby is between 17-26 weeks (4-6 months) old. If your baby is premature weaning may be delayed to between 5-7 months from birth.

We do not recommend introducing solid food before 17 weeks for nutritional and developmental reasons.

Weaning too early (before 17 weeks)

- Your baby's head control will not be ready for sucking and chewing food.
- Your baby's gut and kidneys will not be mature enough to cope with solid food.
- There is an increased risk that your baby will develop coeliac disease or type 1 diabetes*

*See Scientific Recommendations for National Infant Feeding Policy. Food Safety Authority of Ireland

Your baby's earliest weaning date: _____

On the other hand, weaning should not be delayed beyond 6 months.

Delayed weaning (after 26 weeks)

- Your baby's increasing energy and nutrient needs will not be met by milk alone at 6 months.
- Delayed development of muscles for speech
- Babies weaned later are less likely to eat a varied diet.

Remember that all babies are different. Some babies may be ready to wean sooner than others.

Signs of Readiness to Wean

- Sitting with support and has good head control
- Being hungry between milk feeds even when larger milk feeds have been offered
- Watching others with interest when they are eating
- Putting toys and other objects in their mouth

Baby-Led Weaning and MMA

Baby-led weaning is an alternative method for introducing complementary foods to infants. Your baby feeds themselves with hand-held food instead of being spoon-fed by an adult.

The main differences between traditional and baby-led weaning practices are:

Traditional	Baby-led
Start 4-6 months	Start 6 months
Spoon feeds	Baby self-feeds
Pureed meals, progressing lumps appropriately	Whole 'stick shaped' foods
Finger foods from 6 months	

Research has shown that baby-led weaning may result in less food fussiness. It has been reported that baby-led weaning may also lead to improved appetite regulation and a healthier weight in later life. However, there is no current evidence to support this.


Is baby-led weaning suitable for MMA?

For MMA babies, we recommend finding a **balance between traditional and baby-led weaning**.

A balanced approach to weaning means:

- Giving spoon feeds to begin with if your baby is ready to wean before 6 months old.
- Progressing the texture of these spoon feeds and introducing appropriate finger foods at 6 months.
- Giving a mixture of spoon feeds and finger foods.
- Allowing your baby to self feed where possible and decide when they are full.

Discuss with your dietitian the best option for your baby.



**Ask your dietitian
for the new Temple
Street recipe book
for ideas**

Getting Started

- Ensure your baby is in a well supported seated position.
- Pick a time when your baby is hungry and alert, but not starving. Your baby may only take 1-2 teaspoons to begin with, you can gradually build up the amount from there.
- If the food is rejected after a few attempts just try again at a different time or the next day.

Things You Will Need

- Clean baby-friendly utensils
- Lots of bibs
- Plenty of time



Top Tips

- Go at your baby's pace, do not rush
- Choose a time when both you and your baby are relaxed.
- Allow your baby to play with food and make a mess. Avoid wiping your baby's mouth after each spoonful
- Always stay with your baby when he/she is eating



What to Feed First

The first foods offered are protein **free foods** including vegetables and fruit. Vegetables and fruit will be an important part of your child's low protein diet. Remember, your child may like brussel sprouts even if you don't ! Offer a wide variety of free foods.

Vegetable Purees

Such as those containing carrots, sweet potatoes, swede/turnip, parsnips, butternut squash, cauliflower, courgette, broccoli, and beetroot.



Babies have a natural desire for sweet tastes; it is better to introduce savoury purees first.

Fruit Purees

Such as apples, pears, peaches, nectarines, mangos, plums, banana and melon.

At first, offer one single vegetable or fruit at a time and then combine flavours when your baby is taking bigger quantities.

How to make pureed vegetables & fruit

- Cook vegetable or fruit until tender and soft. Some ripe fruits don't need cooking
- Liquidise or pass through a metal sieve with a fork to remove all small lumps and form a smooth texture
- Water or low protein milk can be added to the puree to make it more runny. 'Promin low protein pasta meal' can be added to make it thicker
- Puree the vegetable or fruit from the family meal or batch cook and freeze

Do not add salt, gravy, stock, honey or sugar.



What to expect?

Your baby may make some odd facial expressions when trying a new taste. Don't be put off by this. This does not necessarily mean your baby doesn't like the food.

To help your baby to learn, keep offering new flavours over a few weeks. If your baby does not accept a new food, **offer it at least 10-15 times.**



Gagging vs Choking

Babies have a sensitive gag reflex. This is a normal response which helps them learn how to eat and protects them from choking.

If your baby gags, stay calm and tell them it's okay. If you panic your baby will panic.

Choking is where food obstructs the airway. Choking is silent where as gagging is not. Please see www.sja.org.uk/sja/first-aid-advice/ and discuss with your public health nurse.

Vitamin D

If your baby is breastfed they should already be taking 5 micrograms (5ug) of Vitamin D3 every day. This will need to continue throughout the weaning process and until they are 1 year old. Your dietitian or pharmacist can help you with finding a suitable vitamin D supplement for your baby's needs.



If your baby is fully bottle fed and is taking more than 300ml/day of regular and special infant formula then they will not need to be given a Vitamin D3 supplement.

Feeding Routine

There are several different elements to weaning on the MMA diet. Timing and routine play a crucial role to ensure an appropriate balance between natural protein, synthetic protein and free foods is achieved. In general:

Breastfed Babies

Give a measured amount of MMA infant formula or protein free formula.

Then offer a **free** spoon feed

Then follow with breast milk to appetite.

Bottlefed Babies

Give a measured amount of standard infant formula.

Then offer a **free** spoon feed.

Then give the measured amount of MMA infant formula
and then the protein free formula to appetite.

These three elements do not have to be done in the same sitting. Go at your baby's own pace.

For example, your baby could have a morning feed at 6am of standard infant formula; then a free spoon feed at 8am followed by MMA infant formula or protein free formula afterwards and so on.

**Amount of MMA infant formula required by my
baby per day**

_____ml



Introducing Protein

Once your baby has mastered the skills to eat and is managing to take around 10 spoons of free food/suitable finger foods, you can introduce a protein containing spoon feed.

The protein in food is counted as **exchanges**. An exchange is an amount of food which provides 1g of protein.

1g Protein = 1 Exchange (1ex)

Up to now all exchanges (natural protein) has been provided by the breast milk or standard infant formula.

Once protein containing food has been started then the amount of breast feeds/standard infant formula must be reduced.

Breast Fed Babies	Bottle Fed Babies
Once protein from food has been introduced your baby should naturally take less milk from the breast	Once protein from food has been introduced, the quantity of formula milk will need to be reduced 1/2 ex of formula = _____ ml 1 ex of formula = _____ ml

Suitable First 1g Protein Exchange Foods

- 2 tbsp* Readybrek (8g uncooked)
- ½ Weetabix
- 1 heaped tbsp* porridge (10g uncooked)
- 1 small/‘egg-sized’ potato (60g, cooked)
- ⅓ medium avocado (50g)
- 1tsp* lentils (uncooked)
- 2 heaped tsp* or 11 Kidney Beans (cooked)
- 1 tbsp* or 14 chickpeas (cooked)
- 1 tbsp* or 7 butter beans (cooked)
- 2 level tbsp* peas (cooked)
- 1 tbsp baked beans
- Bread sticks and rice/oat cakes**
- Hummus/pesto**
- Regular pasta (8 pieces penne/fusilli)
- 1 blue scoop regular couscous or quinoa (cooked)

***Ask your dietitian for the Temple Street recipe book
for more ideas***

* Tbsp=tablespoon/ tsp=teaspoon

** Check the label

Progressing the Weaning Diet

Your baby will move through the stages of weaning naturally at their own pace. You can encourage and guide them by:

- Offering new foods and flavours regularly
- Progressing to lumpier textures and harder finger foods as able
- Allowing your baby to self-feed
- Introducing more exchanges as food following the advice of your dietitian:

Breast Fed Babies

Giving some exchanges as food and some as breast milk for as long as you wish to continue breastfeeding

Bottle Fed Babies

Gradually reducing the volume of standard infant formula and giving exchanges as food instead

The **overall aim** by one year to have your baby eating:

- 3 meals/day and 1-2 snacks day
- Adapted family meals
- Exchanges as solid foods or solid foods and breast milk
- Progressing on from MMA infant formula to later-stage synthetic protein 3 times/day.



What about Allergens?

Introduce the foods that can trigger allergic reactions from around 6 months. It is best to offer these foods one at a time so that you can spot any reaction.

These foods are:

- Milk
- Eggs
- Gluten (from wheat, barley, rye, semolina and spelt)
- Nuts*
- Seeds

These foods will likely contain exchanges and will have to be counted. Speak to your Dietitian about suitable recipes to help you to include these foods in your baby's weaning diet.

**Whole or chopped nuts should not be given to children under 5 years of age due to the risk of choking.*

The Next Step:

Changing Their Synthetic Protein

From the age of 6 months an alternative synthetic protein can be introduced. This type of synthetic protein has a similar taste to MMA infant formula and can be given off a spoon. This is to make the transition to next stage synthetic protein products easier.

There is one option available at present:

- MMA Gel



Offer your baby cool boiled water or low protein milk as a drink to ensure they are well hydrated.

Introducing the Beaker

6-9 Months

6-9 months is the ideal time to introduce your baby to a beaker. By 1 year it is recommended all drinks are taken from a beaker.

Why get rid of the bottle?

- Allows your baby to fully taste their synthetic protein
- Makes transition to next stage synthetic protein easier
- Improved dental health
- Appropriate oral and speech development

What to look for in a beaker?

- A free flowing spout
- Handle on both sides
- For example: Tommee Tippee Free Flow Trainer Cup, the Munchkin Miracle 360° Trainer Cup, Ikea Borja Training Cup.

At first your baby will find it difficult to drink from a beaker. With some practice at every meal they will quickly learn to drink from it.

What should you put in the beaker:

- MMA Infant Formula
- Protein free formula
- Cool boiled water
- Low protein milk

Avoid giving juice of any type to your baby.

Drinking water will get them into good habits for life
and keep teeth healthy.

Bottled water is not recommended as it can contain too much sodium. If using, look for a sodium content <20 mg/L.

Moving on With Spoon Feeds: 6-9 Months

Your baby should now be ready to move through to the next stage of weaning

- Offer thicker and lumpier textures
- Meals can be mashed instead of pureed
- Allow your baby to self-feed using a spoon
- Finger foods should be firmer in texture
- Keep introducing new flavours and textures
- Experiment with different combinations of flavours

Ensure your baby is fully supported and in an upright position.
Never leave your baby alone when eating in case of choking.

Suitable Finger Foods

Parboiled vegetable batons/florets - carrot, parsnip, sweet potato, broccoli, cauliflower.

Ripe fruits – melon, pear, peach, apple, kiwi, orange

Batons – low protein cheese, low protein bread, low protein pancakes, low protein bread sticks.

Mini rice cakes/bread sticks (contain protein)

Sample Meal Plan:

Breakfast

Cereal e.g. Weetabix, Readybrek, porridge made with low protein milk.

For a free option stewed fruit with Koko yoghurt (up to 50g)+/- Promin

Pastameal

MMA Infant formula/Protein free formula from a beaker

Mid -morning

MMA Gel

Lunch

Red split lentil/ chickpea/ butter beans +and vegetables or potato and vegetables or puree/mashed free vegetables with a measured quantity of cream cheese/hummus*. For a free option homemade vegetable soup and mashed in low protein bread

MMA Infant formula/Protein free formula from a beaker

Mid -afternoon

MMA Gel

Teatime

Stewed fruit with a measured quantity of natural yogurt* or a tub of non-dairy yogurt* or mashed avocado with banana or stewed fruit + baby rice*. For a free option stewed fruit or vegetables thickened with Promin Pastameal

MMA Infant formula/Protein free formula from a beaker

*** check label to calculate quantity permitted (see page to 36 for this calculation)**

Moving on With Spoon Feeds: 9-12 Months

Suitable Finger Foods

- Continue to offer soft ripe vegetable and fruit
- Cooked low protein pasta
- Low protein pancakes
- Low protein toast fingers
- Batons low protein cheese
- Low protein/regular bread sticks
- Mini rice cakes
- Low protein garlic bread

Sample Meal Plan:

Breakfast

Cereal e.g. Weetabix, Readybrek, porridge made with low protein milk.

For a free option stewed fruit with Koko yoghurt (up to 50g)+/- Promin

Pastameal

MMA Infant formula/Protein free formula from a beaker

Mid -morning

MMA Gel + finger food

Lunch

Low protein pasta, couscous, rice with mashed vegetables with protein exchanges from potato, beans, lentils, peas, chickpeas, cream cheese, regular pasta or rice. For a free option just omit the exchange food

MMA Infant formula/Protein free formula from a beaker

Mid -afternoon

MMA Gel + finger food

Teatime

Low protein pasta with cream cheese* and free tomato-based sauce or baked beans on low protein toast, hummus* on low protein bread, pot of dairy free yogurt, mashed stewed fruit with natural yogurt* For a protein free option low protein french toast, homemade vegetable soup, low protein pancake, low protein garlic bread, low protein cheese on toast

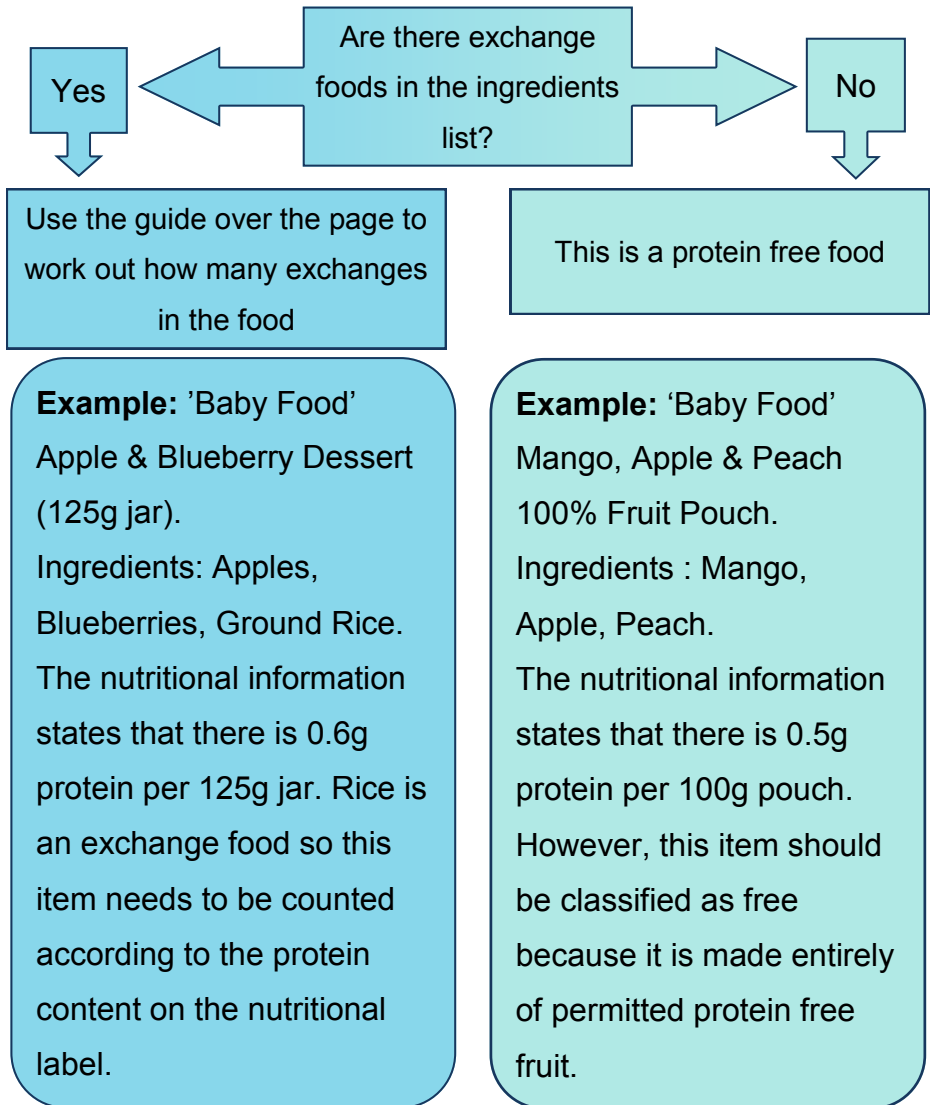
MMA Infant formula/Protein free formula from a beaker

*** check label to calculate quantity permitted (see page to 36 for this calculation)**

	Birth to 4 Months	4 to 6 Months
Your Baby Can ...	<ul style="list-style-type: none"> Suck and swallow liquids Push tongue out 	<ul style="list-style-type: none"> Sit with support Hold head steady Keep food in mouth and swallow
Food Options	Avoid all solid food until at least 17 weeks.	<ul style="list-style-type: none"> Protein free pureed vegetables and fruit Low protein foods e.g. low pasta, cous cous, bread, rice Talk to your dietitian about pureed exchange foods Introduce gluten
Food Preparation		<p>Mix foods with water or low protein milk as required</p> <p>Don't add salt or sugar</p>
Drinks / Synthetic Protein	<p>Measured amount of regular infant formula and measured amount of MMA Infant formula and protein free formula to appetite</p> <p>Or</p> <p>Measured amount of MMA Anamix Infant and protein free formula then breastfeed to appetite</p>	<p>Measured amount of regular infant formula and MMA Infant formula and protein free formula to appetite</p> <p>Or</p> <p>Measured amount of MMA Anamix Infant and protein free formula then breastfeed to appetite.</p> <p>Between feeds, cool boiled water if warm weather or constipated</p>
Texture		<ul style="list-style-type: none"> Smooth puree with no lumps

6 to 7 Months	7 to 9 Months	9 to 12 Months
<ul style="list-style-type: none"> Sit without support Begin to chew food 	<ul style="list-style-type: none"> Use a cup with help Grasp and hold onto things 	<ul style="list-style-type: none"> Grasp and hold onto things Begin to self-feed
<ul style="list-style-type: none"> Thick pureed free and exchange foods Suitable finger foods 	<ul style="list-style-type: none"> Adapted family meals with exchange and free foods 3 meals/day Suitable finger foods 	<ul style="list-style-type: none"> Adapted family meals with exchange and free foods 3 meals/day Suitable finger foods
<p>Don't add salt or sugar</p>	<p>Cut soft fruit and vegetables into batons for your baby to hold</p> <p>Don't add salt or sugar</p>	<p>Offer finger foods at each meal</p> <p>Don't add salt or sugar</p>
<p>Start offering MMA Infant Formula and protein free formula from a beaker</p> <p>Your dietitian may recommend starting synthetic protein from a spoon</p>	<ul style="list-style-type: none"> Measured amount of MMA Infant Formula Protein free formula Continue synthetic protein spoon feed.* Water <p>*Your dietitian will recommend a set amount of synthetic protein taken from the spoon.</p>	<ul style="list-style-type: none"> Measured amount of MMA Infant Formula Protein free formula Continue synthetic protein spoon feed.* Water <p>*Your dietitian will recommend a set amount of synthetic protein taken from the spoon.</p>
<ul style="list-style-type: none"> Thicker puree Minced/mashed with soft lumps Soft finger food 	<ul style="list-style-type: none"> Minced/mashed with soft lumps Soft finger food 	<ul style="list-style-type: none"> Chopped up foods Harder finger foods

Reading Food Labels



How to work out the number of exchanges per portion

If a food contains protein you will need to work out how many exchanges are in a portion. Use the guide below to help you.

If the protein content per portion is not listed you can calculate

Protein content per portion	Number of Exchanges
0 -0.3g	Free
0.4g -0.7g	½
0.8g -1.2g	1
1.3g -1.7g	1 ½
1.8g -2.2g	2

this yourself using the information provided on the nutrition label. To do this you will need to know 2 things:

- The weight/amount of the food to be eaten
- The protein content per 100g of the food

This is how it is done:

$$\frac{\text{Weight of food to be eaten} \times \text{Protein content per 100g}}{100}$$

The next few pages contain examples of how to read nutritional labels.

Example 1: 'Baby Food' Carrots & Parsnips

Ingredients: Carrots, Parsnips

120 g jar

Nutritional Information	Per 100 g	Per Jar
Typical Values		
Energy (kJ)	201kJ	241kJ
Energy (kcal)	48kcal	58kcal
Fat	<0.5g	<0.5g
(of which saturates)	0.2g	0.24g
Carbohydrate	10.1g	12.1g
(of which sugars)	9.2g	11.0g
Fibre	1.4g	1.7g
Protein	0.5g	0.6g
Salt	0.04g	0.05g

Step 1: Look at the ingredients. Carrots and parsnips are both 'free' foods. These are the only ingredients so this baby food is a 'free' food and you do not need to use the nutritional label to check the protein content.

Example 2: 'Baby Food' Broccoli, Peas and Pears

Ingredients: Broccoli, Peas, Pears

120 g pouch

Nutritional Information	Per 100 g	Per Pack
Typical Values		
Energy (kJ)	219kJ	263kJ
Energy (kcal)	52kcal	62kcal
Fat	<0.5g	0.5g
(of which saturates)	<0.1g	<0.1g
Carbohydrate	10.1g	12.1g
(of which sugars)	7.9g	9.5g
Fibre	2.8g	3.4g
Protein	1.0g	1.2g
Salt	0.03g	0.04g

Step 1: Look at the ingredients. Broccoli and pears are both 'free' foods. However, peas are an exchange food. Therefore, you need to use the nutritional label to work out the protein content.

Step 2: Looking at the nutritional label.

1 pack = 1.2 g protein

Therefore, 1 pack = 1 exchange

Example 3: 'Baby Food' Carrot and Potato

Ingredients: Carrots, Potatoes, Ground Rice

125g jar

Nutritional Information	Per 100 g
Typical Values	
Energy (kJ)	205KJ
Energy (kcal)	51kcal
Fat	1.1g
(of which saturates)	0.005g
Carbohydrate	7.4g
(of which sugars)	2.8g
Fibre	2.3g
Protein	1.1g
Salt	0.05g

Step 1: Look at the ingredients. Carrots are a 'free' food. Potatoes and rice are both exchange foods. Therefore, you need to use the nutritional label to work out the protein content.

Step 2: Looking at the nutritional label.

Protein per 100 g = 1.1 g protein. However, the jar is 125 g.

Step 3: Use the formula to work out how many exchanges are in the full jar.

Protein content per 100 g (1.1 g) x Weight of product to be eaten (125 g)

100

1 jar = 1.3 g protein, therefore, 1 jar = 1 ½ exchanges

Example 4: 'Baby Food' Apple Rice cakes

Ingredients: Wholegrain Rice, Apple juice, Cinnamon

Nutritional Information	Per 100 g	6 g (Per 3 cakes)
Typical Values		
Energy (kJ)	1660J	100kJ
Energy (kcal)	393kcal	24kcal
Fat	2.6g	0.2g
(of which saturates)	0.5g	Trace
Carbohydrate	83.2g	5.0g
(of which sugars)	14.1g	0.8g
Fibre	3.1g	0.2g
Protein	7.5g	0.5g
Salt	0.03g	Trace

Step 1: Look at the ingredients. Rice is an exchange food.

Therefore, you need to use the nutritional label to work out the protein content.

Step 2: Looking at the nutritional label.

3 cakes = 0.5 g protein = ½ exchange

6 cakes = 1g protein = 1 exchange

Additional Information on Reading Labels

Some foods that are not on our exchange lists, you might need to work out the amount of food that is 1 exchange such as cereal or baby rice.

Weight of product that is 1 exchange:

$$\underline{1 \times 100}$$

Protein content per 100 g

Weight of product for your required number of exchanges:

$$\underline{\text{No. of Exchanges} \times 100}$$

Protein content per 100 g

The following example shows you how to use this information

Example 5: 'Baby Food' Rice

Ingredients: Organic Rice

Nutritional information	Per 100 g
Typical Values	Dry weight
Energy (kJ)	1643KJ
Energy (kcal)	387Kcal
Fat	1.0g
(of which saturates)	0.4g
Carbohydrate	86.7g
(of which sugars)	Trace
Fibre	1.8g
Protein	6.9g
Salt	0.04g

Step 1: Look at the ingredients. Rice is an exchange food.

Therefore, you need to use the nutritional label to work out the protein content.

Step 2: Looking at the nutritional label. Protein per 100 g = 6.9 g protein.

Step 3: Use the formula to work out how many grams of this baby rice is 1 exchange.

$$\underline{1 \times 100}$$

$$6.9 = 14 \text{ g of this baby rice for 1 exchange}$$

$$\underline{2 \times 100}$$

$$6.9 = 29 \text{ g of this baby rice for 2 exchanges}$$



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