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## Cow's milk protein allergy

Cow's milk protein allergy is one of the most common food allergies seen in children. It is most commonly seen during the first year of life. Many children who have been allergic to cow's milk protein become tolerant to it by the time they are 5 years old.

### What is cow's milk protein allergy?

Cow's milk protein allergy is an allergic condition which is triggered by drinking cow's milk or by drinking or eating products made from cow's milk such as cheese, cream and yoghurt.

### Cow's milk protein allergy symptoms

- Skin symptoms, such as [itching](#), redness, flushing, rashes (like [urticaria](#)) and [eczema](#).
- Gut (digestive tract) symptoms, such as feeling sick ([nausea](#)), being sick (vomiting), [gastro-oesophageal reflux disease](#), [constipation](#) and [abdominal \(tummy\) pain](#). There may be blood and/or mucus in the stools. In very young children there may be irritability and [colic](#), food refusal and faltering growth.
- Breathing (respiratory) symptoms, such as a runny or itchy nose, cough, shortness of breath and [wheezing](#).

The symptoms are often vague and sometimes it is very difficult for a definite diagnosis to be made.

## How common is cow's milk protein allergy?

It is difficult to know exactly how common it is because of differences in classifications. It is thought to be the second most common food allergy after egg. Cow's milk protein allergy occurs in about 7% of babies who have formula milk, but in only about 0.5% of exclusively breast-fed babies, who also usually have milder reactions. Exclusive breastfeeding may also protect babies from developing an allergy to cow's milk protein after they are weaned. It usually shows itself by 1 year of age.

Cow's milk protein allergy is more likely in children who have other allergic (or atopic) conditions such as [asthma](#), [eczema](#) or [hay fever](#), or if close family members have those conditions.

## Allergic reactions to milk

There are two different processes which cause allergic reactions in the body; cow's milk can trigger either of these in some people. Some people develop symptoms of both types of reaction.

## Non-immunoglobulin E-mediated reactions (non-IgE-mediated allergy)

These are slow reactions which can occur hours, or more usually days, after consuming milk. The usual range is from 2-72 hours. There can be a skin reaction such as eczema, tummy (abdominal) symptoms such as pain, reflux or colic or breathing (respiratory) symptoms.

## How to diagnose cow's milk protein allergy

### Excluding milk

The best way to find out if the child has this kind of allergy is to exclude cow's milk from their diet. Milk needs to be excluded for at least two weeks, as the symptoms caused by slow reactions also take quite a long time to settle.

### Challenge test

If the symptoms settle when milk is removed from the diet, a challenge test can be done in which the child has a small amount of milk. If the milk causes the same reaction as before, the diagnosis can be confirmed. It may take several days for the reaction to show. A challenge test can be repeated every few months, as the child is likely to grow out of this allergy with time.

For babies who are bottle-fed, there is special formula milk available on prescription. This has the proteins broken down so that they do not cause the allergic reaction.

### **Vitamin supplements**

Mothers who are breastfeeding need to exclude milk and milk-containing foods from their diet. They should be prescribed a supplement of calcium and vitamin D, so that they don't become deficient in these nutrients.

### **Diet**

Older babies and children who are on a cow's milk-free diet for confirmed allergy should see a specialist children's (paediatric) dietician who can make sure the diet is balanced and contains enough calcium.

It is important to read the labels on food that you buy. Some milk products which are used as ingredients may have names such as casein, whey or curd. More familiar dairy products such as butter, yoghurt and cheese are also found in many packaged foods.

Most children with this kind of allergy grow out of it by the time they are 3 years old.

## **Immunoglobulin E-mediated reactions (IgE-mediated allergy)**

These are usually fast reactions which can cause skin rashes and needing to be sick (vomiting). They occur within minutes to up to two hours of the milk being consumed. They are triggered by the body releasing a chemical called histamine, so antihistamine medicine can be used to treat the symptoms. It is extremely rare that cow's milk causes a life-threatening [anaphylactic](#) reaction.

### **How to diagnose**

This type of allergy can be diagnosed with a [skin prick](#) test or a blood test. If this type of allergy is suspected, the child would usually be referred to a children's doctor (paediatrician) who would arrange for the test to be done in hospital. Advice from a dietician is also recommended.

Most children with this kind of allergy grow out of it by the time they are 5 years old. If the reaction has been severe, it may be safest to carry out a challenge test in hospital.

A referral to a paediatrician should be made for either type of reaction if:

- The child is not growing well.
- There have been any severe reactions.
- Multiple food allergy is suspected.

### **Mixed IgE- and non-IgE-mediated allergy**

Sometimes there can be a mixture of the two types of allergic reaction. This causes a combination of the two types of allergic responses.

## **Milk alternatives**

If cow's milk protein allergy is suspected then your doctor will advise a completely cow's-milk-free diet until the child is 9-12 months old. This should be for at least six months. Your doctor can prescribe formula milk suitable for your baby. There are several different types of milk available.

### **Hydrolysed milk**

Extensively hydrolysed milk is usually tried first. The protein in hydrolysed milk is broken down (hydrolysed) into smaller pieces so that it does not trigger a reaction. Examples of hydrolysed milks are Similac Alimentum<sup>®</sup>, Nutramigen Lipil<sup>®</sup> 1 and 2 and Pepti<sup>®</sup> 1, 2 and Junior.

### **AA formula**

If a baby is still having symptoms on a hydrolysed formula then they can try an amino acid (AA) formula. This is sometimes tried first if the allergy is severe or if there are multiple allergies. The protein in AA formula is completely broken down into its smallest units, called amino acids. This should prevent any cow's milk protein reaction occurring. Examples of amino acid formulas are Neocate<sup>®</sup> and Nutramigen<sup>®</sup> AA.

Under the age of 6 months, babies should have either breast milk or specially developed infant formula milk. This should remain their main drink up to the age of 1 year. Cow's milk can then be reintroduced gradually.

### **Other alternatives**

Some people give their children goat's milk or other types of milk which are believed to be more easily digestible than cow's milk. In fact, the proteins in other available mammal milks are very similar to those in cow's milk. Therefore, **changing to goat's milk rarely causes improvement in confirmed cow's milk protein allergy.**

Using milk which is low in a sugar called lactose (lactose-free milk) will not be helpful. This is because **it is the protein and not the lactose in cow's milk which is causing the problem.**

**Soya milk is not generally recommended for children** who are allergic to cow's milk. Soya is another common cause of childhood food allergies and those who have one allergy are more likely to develop others. It should not be used as a main drink for babies aged under 6 months. However, it may be recommended by a healthcare professional after that time if the child is not allergic to it.

## **Lactose intolerance**

[Lactose intolerance](#) is a different condition from cow's milk protein allergy. It occurs because the body cannot digest a sugar called lactose found in milk, rather than a protein. It is very common worldwide but tends to develop in later childhood or in adulthood.

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## **Further reading**

- [Food allergy in children and young people](#); NICE Clinical Guideline (February 2011, minor update 2018)
- [Cow's milk allergy](#); Allergy UK
- [Koletzko S, Niggemann B, Arato A, et al](#); Diagnostic approach and management of cow's-milk protein allergy in infants and children: ESPGHAN GI Committee practical guidelines. *J Pediatr Gastroenterol Nutr.* 2012 Aug;55(2):221–9. doi: 10.1097/MPG.0b013e31825c9482.
- [Cow's milk allergy in children](#); NICE CKS, August 2021 (UK access only)

- Emmert V, Lendvai-Emmert D, Eklics K, et al; Current Practice in Pediatric Cow's Milk Protein Allergy-Immunological Features and Beyond. Int J Mol Sci. 2023 Mar 6;24(5):5025. doi: 10.3390/ijms24055025.

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Originally Published: 19/11/2023	Next review date: 29/03/2023	Document ID: doc_29111

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