

Home reintroduction of hen's egg into the diet

Information for parents and carers



Hen's egg allergy

Most children with egg allergy grow out of their egg allergy during childhood. For children who have had a mild to moderate reaction to egg — e.g. facial rash, hives (raised red, itchy patches) or vomiting — it is appropriate to try introduction of egg initially through the form of baked egg products at home. This is a guide for parents on how to introduce egg back into the diet at home.

Children with egg allergy who should not follow a home introduction advice:

Rarely, some children develop a more severe reaction to egg. Children who have had more severe reactions — e.g. an asthma-type wheeze, breathing difficulty, pallor (very pale) and/or floppiness, loss of consciousness (i.e. anaphylaxis) or FPIES to egg* — should not have egg introduced at home. Such children and those who have many food allergies or severe eczema may also take longer to grow out of their allergy.

For children who are at risk of a more severe reaction or who have had more severe symptoms, a supervised hospital-based food challenge may be needed.

This home introduction advice is **not** suitable for children who have a severe reaction to egg.

*Food Protein Induced Enterocolitis Syndrome (FPIES): FPIES is a delayed type of food allergy. The main symptom is typically profuse vomiting that starts 2 – 6 hours after the offending food has been eaten, in this case, egg. There may also be diarrhoea with or without blood or mucous. As this is a delayed type allergy, allergy testing is irrelevant and the diagnosis is based on clinical history. The advice is to strictly avoid all sources of egg. If FPIES to egg is suspected (or any other food) the child should be referred to the allergy service and will be assessed for a supervised hospital challenge to egg after the age of 2 years.

What is egg allergy?

Egg allergy is caused by an allergic reaction to egg protein. This protein is found mostly in the egg white but also in the yolk. It is common in children under 5 years and usually first noticed in infancy when egg is introduced into the diet for the first time (e.g. scrambled).

What are the symptoms?

Egg allergic infants may develop redness and swelling around the mouth after contact with egg. They may develop a more widespread rash with hives and/or vomit after eating egg. Abdominal pain or diarrhoea may also occur. Accidental skin contact may cause a rash, but is highly unlikely to cause generalised or dangerous symptoms. Commonly, egg allergic infants refuse egg-containing food.

Egg allergy may be responsible for worsening of eczema (this is usually harder to identify, given the slower time to onset of symptoms) and may also cause gastrointestinal problems – tummy pain, cramps, bloating, vomiting, or diarrhoea.

Will the allergy get better?

Egg allergy will resolve in most children, usually by school age. Egg that is thoroughly baked in a food containing flour (e.g. egg in a cake) is less allergenic and tolerated first. Tolerance is then likely to develop to well-baked egg (e.g. egg in pancake). Finally, your child will be able to eat whole, well-cooked egg (e.g. scrambled egg) before being able to eat food containing raw egg, e.g. mayonnaise.

How is egg allergy diagnosed?

The diagnosis of egg allergy is based on a history of reacting to egg or food which contains egg. Very occasionally it will be confirmed by allergy skin tests or blood tests.

What is the treatment?

Currently, the best treatment is, initially, to avoid all food containing egg. If your child can tolerate baked egg in foods, such as cake, they should continue to eat this. Otherwise, egg may be found in a wide range of foods and should be avoided: cakes, pastries, desserts, meat products, salad dressings, glazes, pasta, battered and bread-crumbed foods, ice cream, chocolates, and sweets. This list is not exhaustive and food labels must be read carefully every time you shop. The word “**Egg**” will be listed clearly on the list of ingredients and highlighted in bold. Occasionally, egg may be referred to by unusual terms, e.g. egg lecithin or albumen (especially on imported foods). The proteins in eggs from other birds are very similar to those in hens' eggs and should be avoided too. Many dishes can be made egg free, and substitutes are available (see table below):

Products useful for an egg-free diet	
Egg free products include:	Egg-free mayonnaise Egg-free cakes and muffins Egg-free puddings Egg-free omelette mix
Whole egg replacers:	Whole egg replacer (Allergy care) Ener-G egg replacer (General Dietary) Loprofin egg replacer (SHS) No-egg replacer (Orgran)
Egg white replacer:	Loprofin egg white replacer (SHS)

Lists of egg-free foods can be obtained from many food manufacturers and supermarket chains and are helpful in the day-to-day management of the diet. Internet egg free recipes are also useful.

Further information on egg avoidance is available on the Children and Young People's Allergy Network Scotland (CYANS) website at www.cyans.scot.nhs.uk

Protocol for gradual staged egg introduction at home

Most children with mild to moderate egg allergy tolerate a gradual staged home introduction when following the egg ladder (see egg ladder below).

Introducing baked egg in this way is important, as it may help children grow out of their egg allergy.

Baked egg introduction improves quality of life for egg-allergic children, enhances the natural development of tolerance, and expands the diet.

The speed with which egg allergy resolves is different for each child.

Egg-allergic children who already tolerate baked egg at diagnosis should continue to consume well baked egg.

Reintroduction should be attempted from 12 months of age.

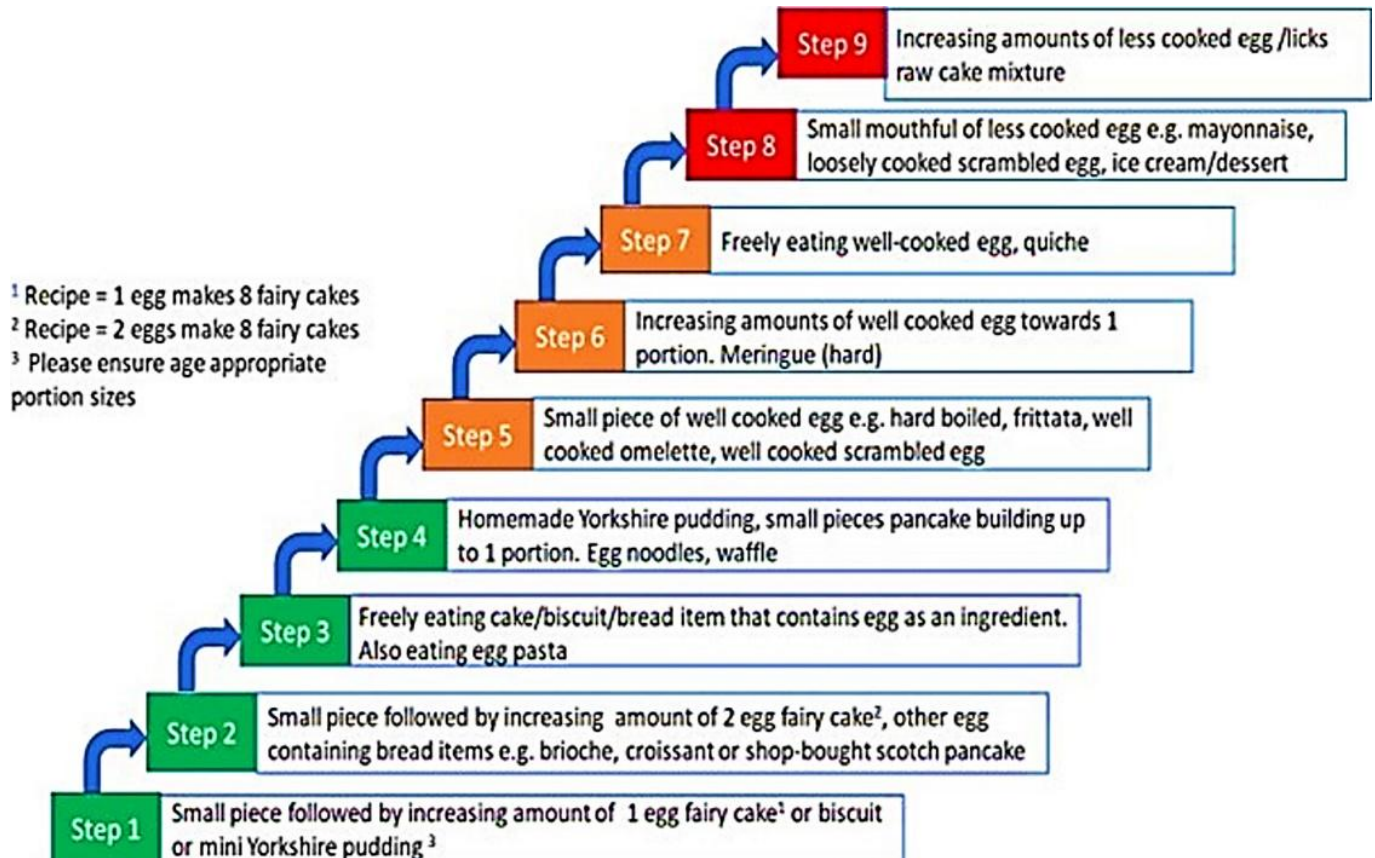
Reintroduction should not be attempted within 6 months of a reaction to egg.

Before introduction:

1. Ensure that your child has been well for the last 5 days.
2. If your child has eczema, wait until the skin is at its clearest
3. Have antihistamine at hand but do not give this to your child before the introduction as this will delay/hide any reaction. Note: some cough medicines contain antihistamine.
4. Continue to give your child any other regular medication
5. Start the introduction in the morning and if possible, on a weekday so that you can contact your doctor if you have concerns.

Egg Ladder: a practical guide to egg reintroduction

This egg ladder is to be used in conjunction with Recipe 1 and Recipe 2 and Food Classification Stages – see below.



Gradual staged egg introduction at home using cake

The first stage of introduction is to give a small amount of egg that is **thoroughly baked with flour** e.g. a fairy cake, as this is less likely to cause allergic reactions than larger amounts of egg, or egg that is less cooked or raw.

The objective is to give slow, stepwise doses of gradually increasing amounts of egg at intervals so that your child can eventually eat food containing egg, which has been baked, with no symptoms. The intervals between amounts given can be flexible. It is better to give small amounts frequently to build tolerance and then slowly increase the amount. If your child develops symptoms, continue with a lower amount or the previous step on the egg ladder that was tolerated. Continue with the lower amount or previous step for several weeks before re-trialling a higher step again.

Initial reintroduction of thoroughly baked egg

Bake a fairy-cake containing egg. Ensure that the other ingredients of the cake are tolerated, (e.g. cow's milk, wheat) and the cake is thoroughly baked.

Recipe 1: To make 8 fairy cakes

- 1 medium egg
- 4oz self-raising flour
- 4oz margarine
- 4oz caster sugar

Bake at 180°C for 15-20 minutes or until golden brown

A biscuit recipe using 1 egg in 8 well-cooked biscuits (these can be savoury) is an alternative for children who dislike the texture of cake. Small, shop bought fairy cakes (no icing) could be used as an alternative. Please check for other allergens (such as wheat or cow's milk) that your child may be allergic to. Cakes can be frozen.

1. Begin by rubbing a small amount of cake on the inner part of your child's lips, wait for 30 minutes. Allow the child to continue normal activities. Observe your child for local redness on the lip, itch or swelling. If there have been no symptoms, give your child a pea sized amount of fairy cake to eat.
2. If your child did not have any symptoms, the next day, give your child two pea sized amounts of fairy cake. If tolerated, double the amount each day, aiming for a whole fairy cake by day 5 or 6. Observe for symptoms with each introduction, e.g. itch, swelling, hives (nettle sting type rash), tummy pain, vomiting, or diarrhoea.
3. If symptoms occur, this is usually within 2 hours after the last dose. Worsening of eczema or tummy upset may occur after some hours, or the next day.

Treatment of symptoms

If symptoms occur at any stage, give a dose of antihistamine (according to the label or as prescribed). Continue to give smaller amounts of cake (that were previously tolerated) or stop if symptoms continue. Continue to give the amount of the egg which was tolerated regularly and retry increasing the amount after 2 - 3 months.

If symptoms occur on low doses, stop re-introduction and try again in 6 months.

Once a 1 egg recipe is tolerated, follow the plan above using a standard two egg fairy cake recipe. If tolerated, maintain this type of baked egg - see Egg Reintroduction Ladder and Egg Classification Table (below) for ideas or other foods that can be tried – at least 2 – 3 times a week for 2 – 3 months and then freely include in the diet.

Increasing amounts of well-cooked egg

Guidance for gradual egg introduction at home using pancake (well cooked)

This pancake introduction can be used once cake has been confirmed to be well tolerated for 2 – 3 months and your child is regularly eating a selection of foods containing baked egg. Progressing to the next level of the reintroduction ladder helps assess further tolerance of egg in higher amounts.

Recipe 2: Suggested recipe for pancakes

- 100g self raising flour
- 1 large egg
- 300ml semi-skimmed milk (or alternative as needed)
- 1tbsp oil (plus extra for frying)

Cook in a hot pan for 3-4 minutes each side – or until golden brown and well cooked on both sides.

Left over pancakes can be individually wrapped in cling film and frozen for up to a month if needed.

1. Give your child a pea sized amount of pancake to eat on day one
2. If there have been no symptoms, give your child twice the amount of pancake to eat the following day
3. Keep doubling the amount on a daily basis until a whole pancake is eaten
4. If symptoms occur, this is usually within 2 hours after the last dose. Worsening of eczema or sore tummy may occur after some hours, or the next day
5. If symptoms do occur, then do not give any more pancake. Give a dose of antihistamines (according to the label) by mouth but continue with other already tolerated baked egg foods. Consider repeating the pancake/well cooked challenge in 6 months.
6. If the pancake has been tolerated, then your child can eat this regularly (2-3 times a week for 4 weeks) along with other food with higher amounts of well cooked egg, such as egg noodles. Please see the Food Classification table for other foods to include.

Your child may now be ready to try a higher amount of well-cooked and less well-cooked egg (see the egg ladder on page 3)

Home introduction of well-cooked scrambled egg or omelette for children with egg allergy who tolerate egg in cakes and pancake regularly (To be given in conjunction with egg introduction ladder)

This section is for children who can already tolerate thoroughly and well baked egg as an ingredient (e.g. in cakes and pancakes) and wish to introduce cooked whole egg (e.g. scrambled egg) at home.

1. Cook a portion of egg (e.g. scrambled/omelette). Ensure that the egg is cooked fully and no raw/undercooked egg remains. Also ensure that other ingredients are tolerated (e.g. cow's milk).
2. Begin by rubbing a small amount of egg on the inner part of your child's lips.
3. Observe for 30 minutes. Allow the child to continue normal activities. Observe your child for local redness on the lip, itch, or swelling.
4. If there have been no symptoms, the next day, give your child a pea sized amount of egg to eat.
5. If your child did not have any symptoms, the next day, give your child two pea sized amounts. Then double the amount each day aiming for a whole well-cooked egg by day 5 or 6. Observe for symptoms with each introduction e.g. itch, swelling, hives (nettle sting type rash), tummy pain, vomiting, or diarrhoea.

Symptoms usually occur quickly e.g. within 5-10 minutes, but can occur up to 2 hours after the food (worsening of eczema may occur after some hours, or the next day)

6. If symptoms persist, then do not give any more cooked egg. Give a dose of antihistamine (according to the label). Consider trying again in six months time (unless there have been reactions to accidental eating of cooked egg in the meantime) and **continue to regularly eat cake type foods as it is important to keep your child tolerating baked egg.**
7. If a portion of cooked egg, e.g. scrambled egg has been tolerated, then your child should continue to eat cooked egg freely for 2 – 3 months and then progress to lightly or less well-cooked or loosely cooked whole egg. Try similar foods e.g. boiled egg (see the egg ladder on page 3).

Food Classification Stages

Stage 1: Baked/well cooked egg, (low egg/with matrix)

Early-stage introduction:

Cake (1 egg/8 cake recipe)
 Hard biscuits
 Crackers
 Mini frozen Yorkshire pudding
 Pastry containing egg (sausage roll, pie, choux)
 Trifle sponge/jaffa cake
 Breadcrumb coating (e.g. fish finger, nugget)
 Wheat free bread/bread sticks

Later stage introduction:

Bread containing egg (e.g. brioche, croissants, buns, panettone, naan, foccacia)
 *Cake (standard recipe),
 *muffins, madeleines, Scotch pancakes, *blinis, Welsh cakes
 Soft cookies
 Toasting waffles, waffle cones
 Egg pasta and dishes with pasta
 Cooked egg glaze
 Prawn crackers

*Egg as binder (e.g. burger, meatball, well cooked Quorn)

Stage 2: Well cooked egg dishes and loosely cooked egg

Early-stage introduction:

*Home-made pancakes, crepes, and waffles
 Batter, *Homemade Yorkshire pudding
 Scrambled egg (firm), hard boiled/fried/poached egg, Scotch egg, omelette/frittata
 Egg fried rice, Egg noodles
 Quiche and flans
 *Duchess potato
 Heated sauces (e.g. Hollandaise sauce)
 Egg custard, crème caramel, crème brûlée
 Nougat and nougat confectionary
 *Hard meringue/pavlova

Later stage introduction:

*Loosely cooked scrambled egg or omelette
 *Carbonara sauce
 *French toast
 *Welsh rarebit

Stage 3: Raw egg products

Mayonnaise and mayonnaise-based sauces (e.g. horseradish sauce, tartar sauce, ranch dressing)
 Salad cream, coleslaw
 Dippy/uncooked boiled/fried/poached egg
 Sorbet
 Cold/hot soufflé
 Luxury and fresh ice cream
 Soft meringue (lemon meringue, pavlova)
 Fresh mousse and other uncooked desserts
 Sushi, tartare, steak confit
 Egg Florentine pizza
 Eggs Benedict
 Soft mallow (e.g. snowball, teacake)
 Royal and fondant icing/decorations
 Raw cake mixture
 Homemade marzipan
 Fondant confectionary
 Uncooked egg white powder

Pasteurised egg

- Each stage to be tried in small amounts first. Reduce to lower stage/smaller amount if symptoms
- *These foods may cause allergic reaction depending on degree of cooking (fully cooked = less allergen)

Can my child have their routine immunisations?

All children with egg allergy should receive their normal childhood immunisations, including the measles, mumps, and rubella vaccination (MMR) as a routine procedure performed by their family doctor/nurse. Studies on large numbers of egg allergic children show there is no increased risk of allergic reactions to the vaccine.

What about other immunisations?

Influenza (flu) vaccine is safe for all patients with egg allergy unless they have had an allergic reaction to egg which was severe enough to need intensive care treatment. If this is the case, you should be referred to an allergy specialist for assessment.

Yellow fever vaccine contains small amounts of egg protein and people with egg allergy who need it should be seen by an allergy specialist at a designated yellow fever immunisation centre.

Can I continue to breast feed my baby?

If you are breastfeeding, any food proteins, such as egg, will also be present in your breast milk, in very small amounts. If your baby is well, with no allergic symptoms, then it is fine for you to eat egg as normal. If your baby has symptoms, such as eczema, rashes, or tummy symptoms, which may be due to an allergy to the egg in your milk, then it may be worthwhile removing egg from your own diet for a couple of weeks to see whether your baby's symptoms improve. If they do improve, continue to avoid egg in your diet while you are breast feeding. If there is no improvement in your baby's condition, then eggs can be re-introduced back into your diet and you can continue to breast feed.

Does egg allergy mean my child is at risk of other allergies?

Many children with egg allergy also have eczema. Egg allergy also increases the risk of developing asthma later in some children. Allergies to other foods are more common in egg-allergic children.

Introduction of peanut when my child has an egg allergy

Egg allergic children may benefit from the early introduction of peanuts to prevent peanut allergy. The introduction of regular peanut into the diet of egg-allergic children under 11 months of age reduces the incidence of peanut allergy.

If your child is already tolerating peanuts or other nuts, then these should be maintained in the diet.

How to introduce peanut into the diet

Using a jar of smooth peanut butter, smear a lentil sized amount on the inner lip.

Wait for 20 – 30 minutes.

If no reaction, give the same amount orally, within familiar and already tolerated food e.g. on a cracker or piece of banana and wait until next day.

Give a pea sized amount the next day, and double the dose of peanut butter daily until about a teaspoon and a half has been given in one sitting, by the end of the week.

If tolerated, keep in the diet regularly.

Regularly means, 2 -3 times per week for a month and then as it would normally be eaten. It is really vital to keep peanuts in the diet once introduced.

If not tolerated, avoid.

Have antihistamine at hand, for any allergic reaction, which can be repeated after 30 minutes if needed. If any features of severe reaction or symptoms do not settle after antihistamine, you should bring your child to the Emergency Department.

Other nuts advice:

Other nuts (e.g. cashew, almond, walnut, etc.) can be introduced one at a time, in an age appropriate form (e.g. a single smooth nut butter) in the same manner.

Note: It is important to introduce egg, peanut and other nuts separately.

If I have a child with egg allergy and then have another baby, when should I introduce egg into the baby's diet?

The Department of Health recommends that egg can be introduced into the infant diet from around 6 months onwards. Furthermore, the deliberate exclusion or delayed introduction of egg may increase the chance of your child developing egg allergy. If your baby develops eczema, they may benefit from the early introduction of egg at 4-6 months to prevent egg allergy developing. Giving egg in small amounts on the first few times is suggested for these infants.

Adapted from the BSACI 2021 guideline for the management of egg allergy.

Reference: Susan C. Leech, Pamela W. Ewan, Isabel J. Skypala, et al. British Society for Allergy and Clinical Immunology guidelines for the management of egg allergy. *Clin Exp Allergy*. 2021; 51(10): 1262- 1278

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