

Allergy factsheet

Allergic disorders are on the increase in the UK and across the world, affecting up to 40% of the population. Allergic disorders include food allergy, eczema, asthma and allergic rhinitis (commonly known as 'hay fever'). They also include reactions to specific allergens such as medicines and insect stings.

What is an allergy?

An allergic reaction is an immune response to a substance to which the person has become sensitised. A substance that causes an allergic reaction is known as an allergen (e.g. pollen, animal dander, dust, certain foods and chemicals). Many allergens are harmless in themselves but in sensitised individuals cause the body to overreact. Allergies can be broadly divided into two groups: immediate and delayed allergies.

Immediate allergy

Immediate allergies commonly occur within 30 minutes of exposure to an allergen but can take up to 2 hours. Immediate allergies are also known as IgE-mediated allergies (IgE is the antibody Immunoglobulin-E). The human body has a complex immune system that helps it to fight infection. When infection attacks the body, the immune system is triggered to produce antibodies (immunoglobulins). These antibodies remember what the bacteria or virus that caused the infection looks like and recognise it when the body is exposed to it again, springing into action to fight the infection.

In people with an IgE-mediated allergy, the body has produced antibodies known as IgEs in response to a particular substance (the allergen) so that it can remember the allergen in future. In other words, the person has become sensitised to this substance, although the substance may be harmless in itself. Whenever the individual encounters the allergen following initial sensitisation, the IgE remembers and the body begins to combat it. This produces the symptoms of an allergic reaction, which can manifest as hives, itching,

swelling, sneezing, coughing, abdominal pain, diarrhoea, vomiting and (although less frequently) in some cases difficulty in breathing or anaphylaxis.

Immediate allergies to food most commonly occur in early childhood – usually before the age of two – when children are trying new foods. It is unusual for older children and adults to develop IgE-mediated food allergies. They are more likely to develop asthma or allergic rhinitis ('hay fever'), which are allergic conditions triggered by exposure to aeroallergens such as pollens, house dust mite or animals.

Delayed allergy

Delayed allergies (also referred to as non-IgE-mediated allergies) are harder to diagnose as they do not occur as rapidly as IgE-mediated allergies and may take between several hours to 3 days to cause symptoms. Symptoms commonly manifest as abdominal pain, bloating, diarrhoea, vomiting or eczema. In non-IgE-mediated allergy the immune system does not act in the same way as it does for IgE-mediated allergy. Actually, we are unsure about exactly what happens in a non-IgE-mediated reaction but it is thought that other cells in the immune system are involved in the response. This makes testing, diagnosis and management of non-IgE mediated allergies rather hard. Because diagnosis is difficult in non-IgE-mediated food allergy, this type of allergy often goes undiagnosed; in some cases, children may suffer with troublesome eczema or stomach problems for many years until they see an allergy specialist. Some people may suffer from both IgE- and non-IgE-mediated food allergies.

Table 1: Symptoms belonging to immediate ige antibody mediated versus delayed non Ige mediated allergy

Type of food allergy	
Common symptoms ■	Symptoms suggest more sensitive delayed allergy ■ Severe symptoms ■
Immediate IgE-antibody-mediated food allergy	Delayed non-IgE-mediated food allergy
Usual timeframe of symptom onset – usually triggered within 15 minutes	Usual timeframe of symptom onset – usually triggered between 2 and 72 hours, may last weeks
Itchy red rash like nettle rash (medical term urticaria)	Reflux causing vomiting, discomfort, incomplete feeds/meals, crying (baby/child)
Swelling of lips, eyelids or face (medical term angioedema)	Diarrhoea and/or constipation
Running nose or nasal congestion (medical term rhinitis)	Abdominal pain with or without excessive wind
Vomiting	Eczema
Diarrhoea	Severe colic, lasting beyond 3 months of age
Swollen tongue Ring 999	Repeatedly refusing food/feeds (baby/child)
Hoarse voice Ring 999	Mucus (stringy slime or blood in stool)
Difficulty swallowing with choking Ring 999	Difficulty swallowing, food getting stuck
Difficulty in breathing, coughing, wheezing Ring 999	Faltering growth or losing weight

Who gets allergies?

We are unsure of why some people develop allergies and others don't. We are aware of factors which make it more likely that a child will develop some form of allergic disease, such as family history. Children who are born into a family where their parents or siblings have some form of allergic disease are more likely to develop allergic disease themselves. However, as a parent you do not pass on the specific allergy (i.e. if you are peanut allergic, this does not mean your child will be peanut allergic), rather you pass on the predisposition for your child to develop allergic disease of some sort, be that eczema as a young baby or hay fever in adulthood. People who are predisposed to develop allergic disease are known as atopic individuals.

We know that babies with eczema in the first few months of life have an increased risk of developing food allergy.

The skin is a protective barrier and keeps bacteria, viruses and allergens out of the body. Those with eczema have a disturbance in this barrier, and we now believe that this disturbance is a route which allows allergens to enter and sensitise the body.

There have been a number of studies which have looked at the link between eczema and food allergy. Most recently, a large study looked at the link between eczema and peanut allergy. Over 600 babies with eczema were enrolled in the LEAP study. Half of the babies ate peanuts regularly (3 times a week) from weaning, and half avoided peanuts. At 5 years of age the children were tested and it was seen that fewer children were allergic to peanuts in the group of children who had been eating peanuts regularly. This has led researchers to believe that eating peanuts can prevent those at risk of developing peanut allergy from doing so.

What can cause an allergic response?

The most common triggers of an allergic response are food, aeroallergens and direct contact with substances. Milk and eggs are the most common food allergens in children, which are frequently outgrown in early childhood. Peanuts, tree nuts, sesame, soya, wheat, fish and kiwi fruit are also common food allergens. While many people are concerned they have symptoms which are caused by a food, in reality less than 5% of the population has a food allergy.

Respiratory symptoms such as asthma or hay fever (allergic rhinitis) are caused by aeroallergens such as tree and grass pollen, house dust mite or animal dander. These are much more common and affect up to 20% of the population.

A small number of people have allergic reactions to drugs and venom, such as bee and wasp stings. We understand less about these allergies as they occur in people who are not atopic (having a predisposition to allergies), and having allergic disease does not put you at an increased risk of being allergic to stings or medication.

People can also develop an allergy to a substance, through direct contact. This is called **allergic contact dermatitis** (for more information see the NES booklet *All About Contact Dermatitis*). As the name suggests, the reaction initially occurs locally on the skin in contact with the allergen. As the allergen builds up, the dermatitis can spread to other parts of the skin. Allergic contact dermatitis occurs when the body's defence mechanisms learn to recognise a substance and become sensitised to it.

How do I find out if I have an allergy?

If you suspect that you or your child has an allergy, it is important to visit your GP, who will ask some simple questions. Because allergic disease affects so many people, guidelines have been written for GPs to help

them diagnose and manage people with allergic disease. These guidelines have been developed by the National Institute for Health and Care Excellence (NICE) with the help of allergy experts.

The first place for the GP to start is to find out why you believe you or your child has an allergy and to ask about what happens on exposure to the allergen, what helps the symptoms and about your family history. This is known as taking an allergy-focused history and is essential in giving clues as to whether there may be an allergy and if any testing is needed. A detailed history is very important, but the time for this may ultimately only be available in a specialist clinic. It may be useful for you to think about this before you visit your healthcare professional and to make a note of any patterns you notice. This might include what you have eaten, where you have been and any specific changes in your environment or circumstances.

Immediate allergies are easily diagnosed, with an allergy-focused clinical history and testing; delayed reactions can be harder to diagnose.

Allergy testing: Immediate allergies

There are three tests which are commonly used in allergy clinics to diagnose immediate allergies: skin-prick testing, specific IgE blood testing and an oral food challenge.

Skin prick test: Skin prick testing (SPT) involves placing a drop of the suspected allergen onto the skin. The allergen is introduced into the top layer of the skin, by pricking through the droplet with a small metal lancet. This will not hurt, or bleed – it is not like a blood test or an injection. This procedure is very safe and rarely causes more than an itch at the site of testing.

If the individual is sensitised to an allergen, they may develop an itchy bump and redness at the site of testing. This is called a wheal and flare. The bump takes 10-20 minutes to develop and indicates the

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individual's immune system recognises the allergen.

SPT gives an indication of the likelihood that the individual may be allergic to a specific allergen. The results of the SPT must be considered with the clinical history; they do not give a definite diagnosis of allergy and they offer no indication of the severity of an allergy. The wheal is measured in millimetres and the larger the wheal size, the more likely it is that the individual is allergic to that allergen.

Results of an SPT are obtained on the same day. In most allergy clinics this means the clinician will be able to discuss the results with you and develop a management plan at the same appointment. There are some reasons why SPT cannot be performed – for example, if you are taking antihistamines or certain other medications which can affect the results of the SPT, or if you have very troublesome and widespread eczema. In such cases a blood test may be performed instead.

If you are having an allergy appointment which will include an SPT, you should stop taking long-acting antihistamines (e.g. Cetirizine, Loratidine) 5 days before testing, and short-acting antihistamines (e.g. Chlorphenamine) 2 days before testing. Please check with your clinic, which will be able to give you more specific information regarding this.

Specific IgE (SptgE) testing: (previously known as the RAST test) looks for and measures IgE in response to a particular allergen in the blood. Blood is taken from the individual and is mixed with the suspected allergen in a laboratory, so you may have to wait for up to 2 weeks for the results. Unlike SPT, medications and medical conditions do not affect the results of SptgE testing.

SPT and SptgE testing are not totally accurate or reliable tests; neither can give a definite diagnosis of allergy; they merely provide an indication that the individual is allergic or tolerant of an allergen. The only way to be certain of

an allergy is to expose the individual to the allergen to see if they have a reaction. If the clinical history does not provide this information, a challenge test may be needed to achieve an accurate diagnosis.

Oral food challenge: A provocation challenge is used to achieve a definitive diagnosis of allergy. The individual is exposed to the allergen in a hospital to see if they have a reaction on exposure. An oral food challenge is the most common form of provocation challenge and is used to diagnose food allergy.

A food challenge will take place in hospital, so that medical staff, equipment and medication are available, in case the individual has an allergic reaction. A food challenge can either be incremental (a number of increasing doses of the food are eaten over a period of about 2 hours) or a 'supervised feed', where the top dose or a portion size is given. Your allergy specialist will discuss which approach is most suitable for you.

Allergy testing: delayed allergies

Elimination diet: Delayed food allergy is harder to diagnose than immediate food allergy as there are not tests that can be performed in a clinic. The approach to delayed food allergy is more of a process of elimination – the suspected food is removed from the diet for a period of 4-6 weeks and then reintroduced for 2 weeks, to look for resolution and a return of symptoms. This approach should not be tried without the support and direction of a dietitian, to ensure the food is accurately removed and a suitable alternative is used instead. This is particularly important in children whose growth may be affected if they do not receive all the nutrients they require for growth and development.

Patch testing: This type of testing is used for people who have skin reactions to chemical substances that come into contact with their skin, such as metals, cosmetics and toiletries.

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The test is looking for a delayed reaction to an allergen. The allergen, mixed with either paraffin or water, is placed on the skin, covered and then left for 48-72 hours.

Several different allergens can be tested at once and the solutions are applied in small patches attached to adhesive strips, usually on a clear area of skin on the person's back. Some of these strips can be related to occupation.

There are, for example, hairdressers', bakers' and printers' strips. Once the strips are removed, the results are analysed. Some testing centres look at the skin again after another 48 hours for any further reaction.

Other tests: The tests described above are the only tests used to diagnose allergy that have been extensively researched and proven to be reliable. A search of the internet may return other tests available, such as hair analysis, vega testing and blood testing. These should be approached with caution as not enough is known about these tests and their ability to reliably diagnose allergy.

How can I treat my allergy?

The first step in managing and treating allergic disease is identifying what it is you are allergic to. Once this has been established, **the allergen should be avoided** to ensure an allergic reaction does not occur. This is easier with food allergens, particularly since retailers are legally obliged to ensure that the 14 most common allergens are highlighted on food labelling. In principle that sounds fairly easy; however, in practice it can be more difficult, and a dietitian is essential to help guide you through this. The charities Anaphylaxis Campaign (www.anaphylaxis.org.uk) and Allergy UK (www.allergyuk.org) also provide information regarding the **avoidance of food allergens**.

The 14 most common food allergens

- celery
- cereals that contain gluten (including wheat, rye, barley and oats)
- crustaceans (including prawns, crabs and lobsters)
- eggs
- fish
- lupin (lupins are common garden plants, and the seeds from some varieties are sometimes used to make flour)
- milk
- molluscs (including mussels and oysters)
- mustard
- tree nuts – such as almonds, hazelnuts, walnuts, brazil nuts, cashews, pecans, pistachios and macadamia nuts
- peanuts
- sesame seeds
- soybeans
- sulphur dioxide and sulphites (preservatives that are used in some foods and drinks).

It is much harder to remove an allergen from the environment altogether. For example, a pet may be removed from the house (a sometimes difficult process in itself!) but the pet dander, or skin, which causes the allergic reaction, may still be present in the carpets, bedding and curtains throughout the house for a long time. Other methods are needed to reduce exposure to environmental allergens – for example, those who suffer with hay fever caused by grass pollen, should avoid drying laundry outside in the summer months, as pollen will stick to clothes. Again, further strategies on environmental allergen avoidance can be found on the Anaphylaxis Campaign or Allergy UK websites.

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While avoidance is the mainstay of managing allergic disease, it is essential to know how to manage an allergic reaction should one occur. Allergic reactions can be an immediate reaction to a food, resulting in the common symptoms of rashes, hives, itching, swelling, and in severe cases difficulty in breathing or anaphylaxis. These immediate reactions should be treated promptly – for mild reactions, with antihistamines (see below); and for a severe reaction; **adrenaline** (Epipen, JEXT or Emerade). Your allergy specialist will discuss the management of allergy and give you a treatment plan, outlining what to do in the event of an allergic reaction and a prescription for any medication they recommend. *If you have a food allergy and asthma, it is important you have two adrenaline devices with you at all times and have been shown how to use them* (for children this would require a prescription for four devices – two to be kept at school and two to be carried with the child at home). This is because individuals with asthma are at an increased risk of having a severe allergic reaction.

Histamine functions in the body as an inflammatory mediator, which means it is produced when there is a local immune response causing inflammation and/or itching and swelling. Allergic diseases such as hay fever, and allergic skin conditions such as urticaria, insect bite reactions, and allergic drug reactions are histamine-mediated and can be treated with **antihistamine**

medication in the form of tablets or topical treatments. There is no evidence that topical and oral antihistamines can help the symptoms of eczema. However, sedating antihistamines can be useful (and are often prescribed) to help people sleep and prevent restless nights due to itch.

Steroids may also be required by some to manage their asthma, eczema or allergic rhinitis. Please see the NES factsheet, Topical steroids.

Useful resources

Allergy UK

3 White Oak Square, London Road
Swanley, Kent, BR8 7AG
Helpline: 01322 619864
Email: info@allergy.org
www.allergyuk.org

Action Against Allergy

PO Box 278, Twickenham
TW1 4QQ
020 8892 2711
www.actionagainstallergy.co.uk

Anaphylaxis Campaign

PO Box 275, Farnborough, GU14 6SX
Helpline: 01252 542029
Email: info@anaphylaxis.org.uk
www.anaphylaxis.org.uk

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