

Drug Allergy: The Facts

What is drug allergy?

There is more than one type of drug allergy, but this Factsheet focuses primarily on those **rapidly-occurring** allergic reactions that cause urticaria (also known as hives or nettle rash), angioedema (swelling) or anaphylaxis (a severe, life-threatening reaction). These reactions can occur within minutes of the drug being administered or sometimes after a few hours.

This type of drug allergy happens when the person's immune system reacts inappropriately to a particular drug, creating antibodies known as IgE. Doctors refer to this kind of allergy as "IgE mediated".

Many people experience **delayed** allergic reactions that do not involve IgE antibodies. Symptoms usually begin more than 24 hours after the medication is taken, but can start as early as two to six hours.

The aim of this Factsheet is to provide information on those **rapidly-occurring** reactions involving IgE antibodies, rather than the delayed form of reactions. Our intention is to answer questions that you and your family may have about living with a drug allergy. We hope this information will help you to reduce risks to a minimum and take action should a reaction occur.

Any symptoms believed to have been caused by a reaction to a drug should be taken seriously and medical advice should be sought from your GP. Referral to a specialist in managing drug allergy may be required so that the problem can be thoroughly investigated, and a proper diagnosis made.

Throughout this Factsheet you will see brief medical references given in brackets. More complete references are published towards the end.

Who can have a drug allergy?

Anyone can experience an allergic reaction to a drug – not just people with other allergies such as hay fever or food allergy.

Drug allergy is most common in adults, especially the elderly. Often it is found the person has taken the drug previously and not experienced a reaction.

Is it really an allergy?

It is not uncommon to hear someone say they are allergic to a particular drug, but the symptoms they experience are not always triggered by allergy to the drug. One study showed that 94 per cent of children thought to have had an allergic reaction to a drug could in fact tolerate the drug (Rebello Gomes et al, 2008).

Causes of symptoms, other than allergy, include:

- **Infection:** sometimes symptoms that are thought to be allergy-related are actually caused by an infection, not by the drug being used to treat it.
- **The side-effects of certain drugs:** these can cause similar symptoms to allergy, such as a skin rash.

Any symptoms that appear to have been triggered by a drug should be reported to your GP. Because drug allergy is a complex area, referral to a specialist who can manage drug allergy is important in most cases.

Symptoms of drug allergy

Mild symptoms may include nettle rash (also known as hives or urticaria) anywhere on the body, or a tingling or itchy feeling in the mouth. There may be lip or face swelling, which is generally not serious by itself, but can be a sign of something more serious if any of the more severe symptoms listed below are also experienced at the same time.

More severe symptoms are known as **anaphylaxis**. Symptoms of anaphylaxis may include:

- Swelling of the throat, tongue or mouth
- Difficulty breathing
- Severe wheezing
- Severe abdominal pain, nausea and vomiting

In extreme cases there could be a dramatic fall in blood pressure (anaphylactic shock). The person may become weak and floppy and may have a sense of something terrible happening. This may lead to collapse and unconsciousness.

If you have asthma, the risk of severe symptoms is higher than for a person without asthma.

What should you do if you think you have a drug allergy?

If you know or suspect you are allergic to a drug, an important message is to avoid that drug until you have spoken to your GP, even if your symptoms have been mild. It may be necessary for you to be referred to a hospital allergy clinic. Your GP can locate an allergy clinic in your area by visiting the website of the British Society for Allergy and Clinical Immunology (www.bsaci.org).

Once a diagnosis has been made, the risk of a further reaction can be minimised. People affected need to be educated about their drug allergy and those at risk of severe reactions should wear a medical alert bracelet or pendant at all times.

Whenever you see a health professional, including a doctor or dentist, you should always mention that you have an allergy to a particular drug. It may be in your medical records, but it could be overlooked.

What should you do when a reaction occurs?

If you experience mild symptoms – for example a minor rash or flushing of the skin – this should be reported as soon as possible to your GP. It may be useful to your GP and your specialist if you are able to take any photographs with your phone of swelling, skin rash etc.

But if the symptoms are becoming severe – or appear to be progressing rapidly – then someone should dial 999 immediately. Severe symptoms would include breathing difficulties (whether caused by asthma or swelling in the airways) or a feeling of faintness or weakness, which may be caused by a drop in blood pressure. As these symptoms can progress fast, it is best to play safe – if you are in any way concerned, someone should dial 999.

Unless a doctor has already done so, an adverse reaction to a drug should be reported as soon as possible to the Medicines and Healthcare Products Regulatory Agency (MHRA). You can get details from this site:

<http://www.mhra.gov.uk/Safetyinformation/Reportingsafetyproblems/Reportingsuspectedadversedrugreactions/index.htm>

Treatment for drug allergy

Once a diagnosis of drug allergy has been confirmed, avoiding that drug is usually straightforward. Tell your GP, pharmacist, dentist and any other medical professional you see about your allergy.

Some people with allergies (such as those caused by food or insect stings) are prescribed adrenaline auto-injectors to carry with them wherever they go, but these are not usually necessary for people with drug allergy because the drug is unlikely to be taken unexpectedly. However, there may be special cases where the person should carry an auto-injector and your GP or allergy specialist will offer advice on this.

In the case of people who need a specific drug to which they are allergic, where a safe alternative is not available, a special technique called desensitisation can be used. This is a treatment which involves small amounts of the drug being administered under strict medical supervision, increasing the amount until the immune system learns to tolerate the drug.

The way drugs are taken

Drugs are taken in a variety of ways, depending on their type and purpose.

- **Injection:** The most severe reactions are likely to follow injections, especially by the intravenous route (straight into the veins), in which the drug is injected directly into the bloodstream and rapidly distributed throughout the body.

In patients allergic to the paralysing drugs given as part of a general anaesthetic, the onset of signs such as flushing, airway obstruction or drop in blood pressure may be apparent within seconds, and rarely take more than three minutes to begin.

Each year in the UK, approximately 500 people have severe allergic reactions to an anaesthetic drug, which translates to one in every 10,000 procedures (Mirakian et al, 2009).

In the case of injections given beneath the skin (subcutaneous) or into a muscle (intramuscular), a local reaction in the form of reddening, swelling or weals, and itching may be apparent at the injection site at an early stage.

- **By mouth:** Reactions to drugs taken by mouth may start within minutes, but may be delayed for up to two hours if the absorption of the drug is slow. In fact, some delayed-release drugs may cause reactions beginning many hours after being taken.
- **Application to the skin:** Antibiotics or other drugs applied to burns or inflamed or damaged skin may cause allergic reactions. On rare occasions they cause anaphylaxis.

Types of drugs that can trigger allergic reactions

The following drugs are the main ones to be aware of, although there may be others.

Vaccines: These are used for the prevention and treatment of infectious disease or for desensitising people who are allergic to insect venom, pollen, cats, etc.

If you are allergic to egg you should be aware that certain vaccines (for example the **seasonal flu vaccine** and **yellow fever vaccine**) can contain small amounts of egg protein (more information on this can be found on our egg allergy Factsheet). You should discuss this with your treating doctor or allergy specialist.

The **MMR vaccination** has been demonstrated to be safe for children with egg allergy, even though the vaccine is normally cultured on cells from chick embryos (BSACI, 2007, and British National Formulary, 2013). A 2010 medical paper written by UK experts said:

"All children with egg allergy should receive their normal childhood immunizations, including the MMR vaccination, 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 severe allergic reactions to the vaccines. Children who have had documented anaphylaxis to the vaccine itself should be assessed by an allergist." (Clark et al 2010).

If there is concern that a patient may react to a vaccine, the vaccination can be given in hospital.

Insulin: Thousands of people with diabetes inject themselves two or more times a day with insulin. Insulin has the potential to trigger allergic reactions. However, anaphylaxis to insulin injections is rare. This may be due to the fact that such injections, once started, are usually continued for life, and a degree of tolerance is induced. Insulin-induced anaphylaxis may be more common in people whose treatment is interrupted or intermittent.

Antibiotics such as penicillin: These drugs are used for treating infection. Although antibiotics are among the drugs most likely to cause allergy, it is common for allergy to be wrongly diagnosed as the symptoms (such as a rash) may have actually been caused by the infection that is being treated.

If the rash is immediate or widespread, or if there are other symptoms such as facial swelling or breathing problems, it is likely that allergy is the cause. If this applies to you, your doctor can refer you to an allergy clinic where skin prick testing and intradermal skin testing can be carried out. This is generally more helpful than blood tests. An allergy is confirmed or disproved by means of a “challenge test” – where the antibiotic is given under supervision.

If you are one of those people labelled ‘allergic to penicillin’, it is useful to try to find out why this label was applied. Medical records may hold the answer. It would be helpful to know which penicillin is thought to have caused the reaction. People with penicillin allergy can, after many years without exposure to it, become non- allergic. However, this must always be confirmed by a specialist.

A few people allergic to one antibiotic may react to another within the same ‘family’ of antibiotics. For this reason, you should discuss with your GP whether drugs in the same family should be avoided. If your GP is unable to advise, he or she will be able to refer you to a specialist.

As stated previously, if symptoms are severe or appear to be progressing rapidly, someone should dial 999.

Analgesics: This is a large group of drugs with pain-killing and anti-inflammatory properties, known as the ‘aspirin-like drugs’ or as ‘non-steroid anti-inflammatory drugs’ (NSAIDs). They include aspirin and ibuprofen. Any symptoms caused by painkillers and anti-inflammatory drugs should be reported to your GP.

Sensitivity to analgesics in the same group: Anyone who has experienced a reaction to aspirin or ibuprofen should be considered sensitive to the other drugs in this group (such as diclofenac) until it is proved otherwise. Paracetamol is not a NSAID and evidence suggests that most people who are sensitive to aspirin will tolerate paracetamol. If you begin reacting to aspirin or ibuprofen, and are uncertain whether you may also react to paracetamol because you haven’t taken it for some time, you could ask your GP about the possibility of being referred to a specialist for a paracetamol challenge under medical supervision to test whether you are sensitive to it.

If you do react to paracetamol, your doctor should help you identify an alternative painkiller.

General anaesthetics: Drugs used in general anaesthesia pose a particularly difficult problem, since the patient is generally asleep when the reaction starts, and recognition depends on the anaesthetist observing such symptoms as falling blood pressure, airway obstruction, etc., rather than symptoms reported by the patient. Fortunately, sensitivity to drugs used in general anaesthesia is rare, but because such drugs are injected directly into the bloodstream, symptoms may be severe and progress rapidly.

If you have any reason to believe you could be allergic to anaesthetics it is important to discuss this with your anaesthetist at the pre-assessment stage before surgery. You should also mention any food

allergies to your anaesthetist in case there are any food derivatives present in any of the drugs to be used.

It is common for several drugs to be given together or in quick succession at the start of general anaesthesia. These include induction agents (to render the patient unconscious), neuromuscular blockers (to paralyse the patient temporarily, to facilitate airway intubation and the surgical procedure), antibiotics, painkillers and blood or plasma substitute infusions. Any one of these drugs may be the cause of anaphylactic reactions during anaesthesia so it is important to identify which drug was responsible and which alternatives are likely to be safe to use in future.

If a reaction occurs and is thought to be caused by allergy to the general anaesthetic, then early referral to a hospital department with experience of anaesthetic-related reactions is important. This should be the responsibility of the anaesthetist who was present. Skin prick, intradermal testing and in some cases drug challenge may be performed as part of the diagnosis.

The most common cause of allergic reactions during general anaesthesia is the neuromuscular blockers. In some cases, the anaesthetic drugs may not be responsible for the symptoms. For example, the person may be having an allergic reaction to the latex used in gloves or medical equipment, or to antibiotics given at the same time as the anaesthetic.

Local anaesthetics: These are rare as causes of anaphylactic reactions. Sudden episodes of loss of consciousness, blood pressure drop, or heart irregularity can occur during the induction of local anaesthesia (for example, during dental surgery) and these may suggest an anaphylactic reaction. Subsequent investigation with skin testing followed by a challenge is often negative, pointing to some other cause of the symptoms such as a fainting reaction.

Some key messages

If you are allergic to a drug it is vital to know exactly which drug was responsible and, if possible, which alternatives have been identified as safe. Information relating to drug allergies needs to be prominently recorded in your primary care and hospital notes. Even more importantly, we strongly advise you to make yourself responsible for bringing information about your drug allergy to the attention of any medical professional who treats you, such as doctors, nurses, dentists and pharmacists.

Also, we strongly advise you to wear a medical alert bracelet or pendant or carry a letter from a doctor explaining your allergy.

Severe symptoms to a drug should be treated as a medical emergency. If the symptoms are severe – or appear to be progressing rapidly – then someone should dial 999.

References

British National Formulary, 2013.

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Disclaimer

The information provided in this Factsheet is given in good faith. Every effort has been taken to ensure accuracy. All patients are different, and specific cases need specific advice. There is no substitute for good medical advice provided by a medical professional.