Drug Allergy: The Facts

What is drug allergy?

There is more than one type of drug allergy, but this fact sheet 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 occur within a few hours of the drug being administered and sometimes within minutes.

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 started and frequently involve a different pattern of skin reactions and can affect other organs. Although this type of allergy is not the main focus of this fact sheet, we feel it is important that we make reference to it.

Any symptoms believed to have been caused by 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.

New guidance on the diagnosis and management of drug allergy in adults, children and young people has been published by NICE in September 2014. Get details from this site: http://www.nice.org.uk/Guidance/CG183

The aim of this fact sheet

Our intention is to answer questions that you and your family may have about living with a drug allergy – that is, those reactions that occur rapidly and involve the antibody known as IgE. We hope this information will help you to reduce risks to a minimum and take action should a reaction occur.

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 those with other allergies such as hay fever or food allergy.

Drug allergy is most common in adults, especially the elderly. When a reaction occurs, it is often found that the person has had the drug before even if they did not react.
Is it really an allergy?

It is not uncommon to hear someone say they are allergic to a particular drug but this not always genuine allergy. One study showed that 94% of children thought to have had an allergic reaction to a drug could in fact tolerate the drug (Rebelo Gomes et al, 2008).

Other causes of symptoms include:

- Infection: Sometimes adverse symptoms that are thought to be allergy-related are actually caused by an infection, not by the drug being used to treat it.

- Anaphylactoid reactions: These are pharmacological side-effects of certain drugs, which cause very similar symptoms to IgE-mediated allergy.

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

Genuine drug allergy occurs when the immune system reacts in an abnormal way to a drug. Symptoms usually occur rapidly.

Many people with a drug allergy experience only mild or moderate symptoms. Mild allergic reactions include localized skin rashes, itching and urticaria (hives).

More serious symptoms may include swelling in the face, throat and/or mouth; difficulty breathing (for example, asthma); or a widespread skin reaction covering a large area of the body.

The most serious allergic reaction is known as anaphylaxis – which affects more than one body system such as lungs, gut and skin. At the extreme end there may be a dramatic fall in blood pressure (anaphylactic shock). This is where the person may become weak and floppy and may have a sense of something terrible happening. This may lead to faintness, collapse and unconsciousness.

If you have asthma, the risk of severe symptoms is higher than for a non-asthmatic person.

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 received medical advice. This can be obtained by visiting your GP and asking for a referral to an allergy clinic, even if your symptoms have so far been mild. 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. **If the symptoms are becoming severe – or appear to be progressing rapidly – then someone should dial 999.** 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. It is best to play safe – if you are in any way concerned, someone should dial 999.

Any adverse reaction to a drug should be reported as soon as possible to the Medicines and Healthcare Products Regulatory Agency (MHRA). 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, avoidance of that drug is usually straightforward. Inform your GP, pharmacist, dentist and any medical professional you see.

Some people with allergy (such as food or insect sting allergy) 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.

For people who need a specific drug to which they are allergic, a special technique called desensitisation can be adopted. This is a treatment whereby small amounts of the drug are 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. The route of administration is an important factor in the risk of a reaction, its severity and the time it takes to develop.

**Injection:** The most severe reactions are likely to follow injections, especially by the intravenous route, in which the drug is injected directly into the bloodstream and is 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 administration.

**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 discuss the suitability of having the seasonal flu vaccine or yellow fever vaccine with your treating doctor or allergy specialist because these vaccines can contain small amounts of egg protein.

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 BNF, 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 thus induced. Insulin-induced anaphylaxis may be more common in people whose treatment is interrupted or intermittent. This may apply to other drugs.

**Antibiotics:** These drugs, which include penicillin, are used for treating infection. Although antibiotics are capable of causing allergic reactions, there are frequent cases where allergy is wrongly diagnosed and in fact the
symptoms, such as a rash, have actually been caused by the underlying infection.

If the rash is immediate or widespread, or if there are other symptoms such as facial swelling, itching or even anaphylaxis, it will be appropriate to consider allergy as the cause and the doctor may decide testing is necessary. The person can be referred to an NHS allergy clinic, where skin prick testing and intradermal skin testing can be carried out. This is generally more helpful than blood tests, but supervised administration of the antibiotic in hospital is sometimes required to confirm or refute the allergy.

In assessing whether antibiotics are the true cause of an allergic reaction, the nature and timing of the rash are important. Generally speaking, if the symptoms occur rapidly this may be a sign of allergy.

Many people are labelled ‘allergic to penicillin’, sometimes since childhood, but this label should not be applied lightly. If they aren’t in fact allergic, they are unnecessarily denied a useful treatment.

The best advice is to discuss with your doctor any symptoms that occur after you have taken a drug. 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.

Cases of severe allergic reactions to penicillin are rarer now than in the years immediately after the introduction of antibiotics. This may be because of improved methods of production and storage, since impurities or breakdown products caused some of the symptoms that patients experienced. Some people who reacted to penicillin in the past may be able to take it now.

A few people allergic to one antibiotic may react to another within the same ‘family’ of antibiotics. For this reason, a specialist should be consulted to discuss whether drugs in the same family should be avoided. Your GP will be able to refer you.

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.

Analgesics often trigger symptoms similar to those of allergy, such as breathing problems, urticaria (nettle rash) and angioedema (swelling), but sometimes these reactions do not involve the immune system and

strictly speaking the term allergy should not be used. As stated earlier, such reactions are known as ‘anaphylactoid’ – where the cause is a pharmacological side-effect of the drug. Genuine allergic reactions to analgesics are believed to be rare.

Anaphylactoid reactions are generally less severe than genuine anaphylaxis, and people affected may be able to tolerate small doses. Because of this, “challenge testing” for sensitivity to analgesics (in which the patient takes the drug under medical supervision to test whether they are allergic) is a safer procedure than for
antibiotic allergies. The substance is not likely to have a severe effect when administered in small quantities.

A key message is this: any untoward symptoms caused by painkillers and anti-inflammatory drugs should be reported to your GP.

**Sensitivity to analgesics in the same group:** Anyone who has suffered 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 undertaking 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 implicated in anaphylactic or anaphylactoid reactions during anaesthesia. 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 and intradermal testing 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 or anaphylactoid reactions. Sudden episodes of loss of consciousness, blood pressure drop or heart irregularity can occur during the induction of local
anaesthesia for dental procedures and these may point to an anaphylactic or anaphylactoid reaction. Subsequent investigation with skin testing followed by a challenge is usually negative, pointing to some other cause, 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**


**Reviewers**

The content of this Factsheet has been Peer Reviewed by Dr Robert Boyle, Clinical Senior Lecturer in Paediatric Allergy at Imperial College London; and Dr Michael Ardern-Jones, Associate Professor, Consultant Dermatologist, University of Southampton.
Disclosures

Both reviewers are medical advisers to the Anaphylaxis Campaign.

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.

About the Anaphylaxis Campaign: Supporting people with severe allergies

The Anaphylaxis Campaign is the only UK wide charity to exclusively meet the needs of the growing numbers of people at risk from severe allergic reactions (anaphylaxis) by providing information and support relating to foods and other triggers such as latex, drugs and insect stings. Our focus is on medical facts, food labelling, risk reduction and allergen management. The Campaign offers tailored services for individual, clinical professional and corporate members.

Visit our website www.anaphylaxis.org.uk and follow us on Twitter @Anaphylaxiscoms.