

Risks associated with your anaesthetic

Section 9: Serious allergy (anaphylaxis)

Summary

This leaflet explains what anaphylaxis is and why rarely during an operation an allergic reaction may occur.

Before, during and after your operation you will receive different medicines through drips, by mouth or other routes. It is possible to have a serious reaction to one of these, or a chemical used. This leaflet gives information about these reactions and how these can be treated. It also describes what testing you have afterwards to find the cause.

What is anaphylaxis?

Anaphylaxis is a severe allergic reaction that occurs very rapidly, with a massive release of chemical substances inside the body. During the reaction, these chemicals cause problems such as very low blood pressure, breathing difficulties, wheezing, throat swelling, and skin problems including urticaria (hives) and red rashes. Severe anaphylaxis is life-threatening, but when it is recognised and treated quickly, most people recover fully.

There are many other responses to medicines that are not actual allergies and will not lead to serious problems if the medicine is given again. If the medicine caused nausea, vomiting, diarrhoea, constipation, thrush, sore throat, mouth ulcers, shivering, odd dreams or headache, then you may be **sensitive** to the medicine, but this is not an allergy.

How frequently do anaesthetics cause anaphylaxis?

Approximately 1 in 10,000 people having an anaesthetic will develop life-threatening anaphylaxis.¹

More than 95 per cent of these will survive and generally make an excellent recovery. Some patients are understandably anxious about having an anaesthetic in the future after having experienced anaphylaxis, and are advised to discuss this with their GP or anaesthetist.





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What can cause anaphylaxis during an anaesthetic?

Anaphylaxis during anaesthesia is usually caused by an allergy to a specific drug; this is called allergic anaphylaxis. On average, eight drugs are needed during an anaesthetic, but this number can be much higher. The most common causes of allergic anaphylaxis during anaesthesia are:

- **antibiotics** – these are used during surgery to reduce infections
- **drugs used to relax muscles during surgery** (called muscle relaxants or neuromuscular blocking agents) – these are only given to about half of patients and only to those who are already anaesthetised
- **other drugs and substances** – these include chlorhexidine, which is a widely-used antiseptic, and patent blue dye – used in breast surgery.

Latex used to be a common cause of anaphylaxis during surgery. This is less so now as fewer latex-containing products are used in hospitals.

Reactions at the dentist

Local anaesthetic injections or antiseptics used during dental treatment may cause reactions, but it is uncommon for these to be allergic.

The common reactions below are considered minor and do not usually require specific treatment or need investigating:

- a fainting episode following injection
- fast heartbeats, if the adrenaline added to the local anaesthetic injection is accidentally injected into a blood vessel.

If your dentist suspects an allergic reaction, but you do not need immediate hospital treatment, it is important for your dentist to record exactly what reaction you had and write to your GP with full details of the event. Either your GP or your dentist will refer you to a specialist allergy clinic for investigation.

If you do not receive an invitation to attend an allergy clinic, please alert your dentist or GP. Local anaesthetics are used in many procedures, so it is important to know whether you can safely have them on future occasions.

How is anaphylaxis treated during anaesthesia?

The following treatments can be used to treat anaphylaxis:

- adrenaline is an important drug treatment and is given as an injection
- oxygen and intravenous fluids will be given
- several other drugs may be necessary, including intravenous antihistamines and steroids.

Anaesthetists are trained to recognise and treat anaphylaxis. Adrenaline is immediately available in every operating theatre.



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If the operation has not already started, surgery may be postponed unless it is very urgent. You will typically need to visit a specialist allergy clinic before the operation is rescheduled.

Usually the symptoms will settle down quite quickly, but it is important to keep a close watch, therefore most patients need to stay in hospital overnight. Very serious reactions will require treatment in an intensive care unit (ICU).

The anaesthetist will take blood tests at the time of the reaction and repeat them over a 24-hour period. They can then refer you for specialist investigations. In the UK, reports of adverse reactions to drugs and other healthcare-related products are collected by the Medicines and Healthcare Regulatory Agency (MHRA).

How is anaphylaxis investigated after a reaction in the operating theatre?

If there has been a serious allergic reaction during anaesthesia, specialist allergy testing should be performed² in an outpatient clinic. It is essential that you attend this appointment to find out the nature of the reaction, its cause and which drugs can be used safely in the future.

The test usually consists of a tiny drop of the suspected drug or drugs being applied to the skin. The area is then pricked lightly with a small piece of plastic. This is not painful. The test is left for a few minutes to see if an itchy lump develops on the skin. If this happens, it means that you are likely to be allergic to that drug. Sometimes an additional test is needed where the injection goes a little bit deeper. This may sting for a short time. Specialist blood tests may also be needed.

If the cause of anaphylaxis is found to be an allergy to a specific drug, it is vital that you avoid this drug in the future to prevent further severe reactions. The allergy clinic will give you a letter to confirm this and may also advise you on any other similar drugs to avoid. This information will be recorded in your medical notes or on an electronic system so that all other healthcare staff will be aware.

If the allergy is serious, you may be advised to wear a 'Hazard Warning' bracelet at all times in case you need emergency treatment.

Once the trigger has been identified and recorded, it is unlikely that another reaction will occur, as long as healthcare staff are aware of it. It is important that you always tell all healthcare staff about any confirmed allergies.

Is allergy to anaesthetics hereditary?

No. If you are allergic to an anaesthetic drug, it does not mean that your children are more likely to suffer with the same allergy than any other person.

Some very rare non-allergic reactions with anaesthetic drugs can occur in families. The two main conditions are suxamethonium apnoea⁴ where some muscle relaxant drugs can last longer than usual, and malignant hyperthermia⁵ where the body can become very hot. These reactions are serious but different from allergies. They do run in families and are important, so the anaesthetist must be informed if these conditions exist.



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What you can do to minimise the risk of an anaphylactic reaction if having an operation.

If you believe you may be allergic to something you should discuss this with your GP well in advance of going into hospital for surgery.

In particular, if you are allergic to **multiple antibiotics** (especially if this includes penicillin and another different antibiotic) it is useful to discuss this with your GP. The national guidance³ advises that you may benefit from testing to confirm the drugs you are allergic to, and to identify safe alternatives. This needs to be arranged in a specialist allergy clinic and should be done well before your operation.

If you have experienced allergy symptoms after handling **rubber products** – for example, itching or a rash after exposure to latex rubber in children's balloons, rubber gloves or condoms – you should be tested for allergy before your operation. There are two types of test for this: a skin test or a blood test, depending on the procedure at your local allergy clinic.

When you come into hospital, you will be asked several times if you are allergic or have had a bad reaction to anything previously. It is very important that you tell the nurse and anaesthetist looking after you if you have an allergy. If so, this will be recorded so that everyone can check what you are allergic to before you are given medicines or have an operation.

Please bring a list of drugs to which you are allergic to all hospital appointments, including on the day of surgery.

What should I do if I think I have had an allergic reaction during an operation in the past, but it was not followed up?

If you think you might have had an allergic reaction during or soon after previous surgery, it is important to try to find out what happened and what might have caused it. It may be possible for your GP to find out the cause of the problem from your hospital. If there is any uncertainty, your GP should refer you to an allergy clinic to attempt to find the cause.

If you require urgent treatment, it is very important that you or your relatives and carers tell the staff looking after you that you might have had an allergic reaction in the past.

Can I be tested for drug allergy before an anaesthetic?

Routine skin testing prior to surgery to see if you are allergic to anaesthetic drugs is not appropriate. It is only recommended for those people who have had a serious allergic reaction during an anaesthetic in the past.³



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If I am allergic to an anaesthetic drug, are alternative drugs available?

Yes, there are many alternative anaesthetic drugs that can be given. Similarly, if you are allergic to an antibiotic or a skin antiseptic, you will be given a suitable alternative.

Where can I get more information about anaphylaxis?

- Anaesthesia, Surgery and Life-Threatening Allergic Reactions. 6th National Anaesthesia Project (NAP6) (bit.ly/2scv07E).
- Allergy UK (www.allergyuk.org).
- Your GP, your hospital's preoperative assessment clinic or anaesthetic department.

References

- 1 Cook T, Harper N. Anaesthesia, Surgery and Life-Threatening Allergic Reactions. Report and findings of the Royal College of Anaesthetists' 6th National Audit Project: Perioperative Anaphylaxis RCoA, NIAA, NAP (May 2018) (bit.ly/2scv07E).
- 2 Drug allergy: diagnosis and management (CG183). NICE, 2014 (bit.ly/2APegnz).
- 3 Ewan PW et al. BSACI guidelines for the investigation of suspected anaphylaxis during general anaesthesia. *Clin Exp Allergy* 2010;40:15–31 (bit.ly/2AMS2mk).

Further reading

The College website (www.rcoa.ac.uk/patientinfo/factsheets) contains factsheets that include information on a wide range of anaesthetic-related topics, including:

- Suxamethonium Apnoea (succinylcholine or scoline apnoea) (SA)
- Malignant Hyperthermia (malignant hyperpyrexia) (MH).

Further information

Anaesthetists are doctors with specialist training who:

- discuss the type or types of anaesthetic that are suitable for your operation. If there are choices available, your anaesthetist will help you choose what is best for you
- discuss the risks of anaesthesia with you
- agree a plan with you for your anaesthetic and pain control
- are responsible for giving your anaesthetic and for your wellbeing and safety throughout your surgery
- manage any blood transfusions you may need
- plan your care, if needed, in the intensive care unit
- make your experience as calm and pain free as possible.



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Common terms

General anaesthesia – This is a state of controlled unconsciousness during which you feel nothing and may be described as ‘anaesthetised’.

Regional anaesthesia – This involves an injection of local anaesthetic which makes part of your body numb. You stay awake or may be sedated, but free from pain in that part of your body.

You can find out more about general and regional anaesthesia in the patient information booklet *Anaesthesia explained*, which is available from the College website:

www.rcoa.ac.uk/documents/anaesthesia-explained

Risks and probability

In modern anaesthesia, serious problems are uncommon. Risk cannot be removed completely, but modern drugs, equipment and training have made anaesthesia a much safer procedure in recent years.

The way you feel about a risk is very personal to you, and depends on your personality, your own experiences and often your family and cultural background. You may be a ‘risk taker’, a ‘risk avoider’, or somewhere in between. You may know someone who has had a risk happen to them, even though that is very unusual. Or you may have read in the newspapers about a risk and be especially worried about it.

People vary in how they interpret words and numbers. This scale is provided to help.



Very common	Common	Uncommon	Rare	Very rare
1 in 10 One person in your family	1 in 100 One person in a street	1 in 1,000 One person in a village	1 in 10,000 One person in a small town	1 in 100,000 One person in a large town

Your anaesthetist will give you more information about any of the risks specific to you and the precautions taken to avoid them. There are some rare risks in anaesthesia that your anaesthetist may not normally discuss routinely unless they believe you are at higher risk. These have not been listed in this leaflet.

You can find more information leaflets on the College website: www.rcoa.ac.uk/patientinfo



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This leaflet has also been reviewed by the RCoA Patient Information Group which consists of patient representatives and experts in different areas of anaesthesia.

Tell us what you think

We welcome suggestions to improve this leaflet. If you have any comments that you would like to make, please email them to patientinformation@rcoa.ac.uk

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This leaflet will be reviewed within five years of the date of publication.

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