

Allergy to Polyethylene Glycols

This factsheet aims to answer some of the questions you and your family might have if you are diagnosed with or suspect allergy to polyethylene glycols (PEGs). Our aim is to provide information that will help you understand your allergy and minimise risks.

What are PEGs?

PEGs, also known as macrogols, are compounds widely used in medicines, cosmetics and household products. PEGs have many different uses, for example, as tablet surface coatings in medications, ointment bases in creams and as the active ingredient in some laxatives and bowel preparations.

Different types of PEG exist with different molecular weights. Research suggests allergic reactions are more severe with higher doses and with higher molecular weight PEGs.

How common is PEG allergy?

PEG allergy is very rare, despite its widespread use. However, there are some reports of immediate severe allergic reactions to PEGs (including anaphylaxis) in the medical literature. Some studies have described allergic reactions to PEGs caused by pharmaceutical drugs, such as laxatives and depot-steroid injections.

Could I have a PEG allergy? What are the symptoms?

PEG allergy may be suspected in patients with severe allergic reactions starting immediately after taking pharmaceutical drugs where the cause is unconfirmed, or in patients with repeated immediate severe allergic reactions to several structurally unrelated drugs or other products containing PEG.

The onset of reactions to PEG are usually rapid and severe; most patients experience anaphylaxis.

Symptoms can include:

- Nettle rash (also known as hives or urticaria)
- Swelling (also known as angioedema, which can affect any part of the body)

- Difficulty breathing
- Severe wheezing
- Itchy eyes
- Runny nose
- Feeling faint or dizzy (due to sudden drop in blood pressure)

Most healthcare professionals consider an allergic reaction to be anaphylaxis when it involves difficulty in breathing or affects the heart rhythm or blood pressure. Click [here](#) to read our Anaphylaxis factsheet for further information.

Patients with confirmed PEG allergy have usually had repeated immediate severe allergic reactions before diagnosis. A typical history is of immediate severe allergic reactions to several classes of drugs, for example, laxatives, injected corticosteroids, or antacids, all containing PEG.

A history of allergic reactions to foods and non-covid vaccines does not pose a risk for PEG allergy. If your drug allergy has been confirmed or always occurs after the same type of medication, then you are not at risk of allergy to PEG. People with chronic urticaria or angioedema are not at risk of allergy to PEG.

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

PEG allergy is very rare, but you should see your GP if you suspect it. It is important to gain a good detailed medical history. This includes going through medications that you may be on currently (or recently), as these may contain PEG which would make PEG allergy less likely.

PEG allergy is a specialist subject so it is likely that your doctor will need to take advice from an allergy clinic. Only a small number of specialist clinics have the expertise to investigate PEG allergy. Your GP can locate a drug allergy clinic by visiting the website of the British Society for Allergy and Clinical Immunology (BSACI): <https://www.bsaci.org/find-a-clinic/index.htm>

If you are referred to an allergy clinic, the consultant will discuss your symptoms and medical history with you in detail. Diagnosis of PEG allergy relies on a clinical history of allergic reactions to different PEG-containing products and your allergy specialist may also want to use skin tests to help them form a diagnosis. Allergy skin prick testing should only be done under supervised conditions in a specialist drug allergy clinic with expertise in PEG allergy.

Avoiding PEGs

If you have a confirmed PEG allergy, your allergy specialist will give advice on which products you should avoid. Always check medicine and cosmetic labels carefully for PEGs or macrogols. Some medicines will list all ingredients on the outer packaging along with the active ingredients. Others will list the ingredients only in the patient information leaflet (section 6.1 of the leaflet) found inside the medicine box.

Below is a list of some items that may contain PEG:

- Laxatives (such as Movicol)
- Depot steroid injections
- Medicines (such as painkillers, antibiotics, antacids, suppositories)
- Creams and lotions
- Hand soaps
- Shower gels
- Hair products (shampoos, conditioners, hair dyes)
- Dental products (toothpaste, mouthwash)
- Bone cements

If you have a confirmed PEG allergy, you should always report this to your healthcare providers (doctors, nurses, pharmacists, anaesthetists, dentists), as well as to your hairdresser.

Treatment for PEG allergy

If you have a confirmed PEG allergy, you should be given written drug notification from the allergy clinic and you should wear a medical-alert bracelet or pendant. As PEG is not always easily avoidable, you should be prescribed adrenaline auto-injectors in case of emergency.

The view of the Medicines and Healthcare products Regulatory Agency (MHRA) is that two adrenaline auto-injectors should be available to you at all times in case one is broken or misfires, or a second injection is needed before emergency help arrives. Anaphylaxis UK agrees with this view. Read our Adrenaline factsheet for further information.

<https://www.anaphylaxis.org.uk/fact-sheet/adrenaline/>

Covid-19 Vaccinations

The Pfizer and Moderna mRNA-based covid-19 vaccines both contain PEG. The [Green Book](#) (which provides the latest information on vaccines and vaccination procedures in the UK) says individuals with PEG allergy should seek the advice of an allergy specialist before covid-19 vaccination, and if the decision is made to administer an mRNA vaccine then this should be done in a hospital under medical supervision.

Within the medical literature, there is one case of confirmed PEG allergy in a patient with a history of anaphylaxis to the Pfizer vaccine. Although this was the first time PEG allergy had been confirmed to cause anaphylaxis to the Pfizer vaccine, the study also investigated three other cases with reactions suspected to be anaphylaxis, where PEG solution skin tests were negative.

Another study reported negative PEG skin tests in eight patients with a history of hypersensitivity to the Pfizer and Moderna vaccines and successful administration of the second dose of the same vaccine.

Key Messages

- PEG allergy is very rare but see your GP if you suspect it.
- Most patients with PEG allergy will have a history of immediate severe allergic reactions to several different, unrelated classes of drugs.
- There is a small risk of anaphylaxis with any vaccine. It is not known whether PEG allergy is the major cause of anaphylaxis to the mRNA-based covid vaccines.
- PEG allergy diagnosis can be challenging. The hope is that increased awareness of PEG allergy and improved access to PEG allergy testing will lead to earlier diagnosis and reduce the risk of exposure.

Feedback

Please help us to improve our information resources by sending us your feedback at: -

<https://www.anaphylaxis.org.uk/information-resources-feedback/>

Sources

All the information we produce is evidence based or follows expert opinion and is checked by our clinical and research reviewers. If you wish to know the sources we used in producing any of our information products or you would like a version of this factsheet with the references included, please contact info@anaphylaxis.org.uk and we will gladly supply details.

Reviewers

The content of this Factsheet has been peer-reviewed by Dr Priya Sellaturay, Allergy Consultant at Addenbrooke's Hospital, Cambridge and Dr Shuaib Nasser, Consultant in Allergy and Asthma at Cambridge University Hospitals NHS Foundation Trust.

Disclosures

Dr Priya Sellaturay is co-author of two of the studies used to develop this factsheet.
Dr Shuaib Nasser is co-author of three of the studies used to develop this factsheet.

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 Anaphylaxis UK

Anaphylaxis UK is the only UK-wide charity solely focused on supporting people at risk of serious, life-threatening allergic reactions. We provide information and support to people living with allergies through our free national helpline and local support groups. We also campaign and fundraise to achieve our ultimate aim, to create a safer environment for all people at risk of serious allergies. Visit our website www.anaphylaxis.org.uk and follow us to keep up-to-date with our latest news. We're on Facebook @anaphylaxixUK, LinkedIn, Instagram @anaphylaxisUK, Twitter @AnaphylaxisUK and YouTube.