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Peanut, Tree Nut and Seed Allergy

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Peanut and tree nut allergy is most common in infants and young children, but may appear for the first time in adults. Peanut allergy often receives greater attention because it is common (3% of infants), exposure is hard to avoid and in some cases even trace amounts can trigger symptoms. Around 20% of cases resolve, and while severity may occasionally lessen with age, around 20% of cases can become worse with time.

Food proteins trigger food allergy

The substances triggering allergic reactions to food are the proteins in the food. If a person is allergic to *one* protein present in *one* food only (such as peanut or egg) then an allergic reaction can only occur if they eat that *one particular* food. Some individuals may be allergic to more than one protein in more than one food and so may be allergic to several foods.

What does allergy to a nut or seed really mean?

The meaning of the terms nuts, seeds and legumes is confusing, particularly for allergic patients (or their parents) trying to decide what foods to avoid. For example, the term "legume" is often used to describe peanut as well as other plants like peas, chickpeas and soy yet this group of plants also includes wattles and the black bean tree of Queensland. The term "tree nuts" also has limited meaning, as the foods that we consume from these plants come from a wide variety of different botanical families such as Rosaceae (almonds), Anacardiaceae (cashews), Proteaceae (macadamia nuts) or Lecythidaceae (Brazil nuts). When we think of seeds, we often think of small seeds like sesame seed, sunflower seed, poppy seed or pumpkin seed. In fact, coconut (including the husk and inner white flesh that we eat) is also a seed, albeit a very large one! Many of the foods that we consider to be "nuts" are in fact part of a seed or its food source, often with the outer fruit or coating removed.

Therefore, while we often use the terms "tree nuts" or "seeds" to describe some foods, these categories are rarely useful for predicting allergy to foods of similar appearance or taste. With few exceptions (e.g. most people allergic to cashew are also allergic to pistachio), it is not possible to reliably predict the likelihood of allergy to seed or nut-like food without allergy testing to that particular food.

Peanuts are legumes, not nuts

Peanuts are legumes, like peas, lentils and chickpeas (and also diverse other plants like wattles and the black bean tree of Queensland). The proteins in peanut are very different to those in tree nuts (such as almonds, Brazil nuts, cashews, hazelnut, macadamia nuts, pecans, pistachios or walnuts). Therefore someone allergic to peanut is not automatically going to be allergic to tree nuts.

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Peanut allergy is becoming more common

A recent Australian study has shown that peanut allergy affects 3% of children under 1 year of age. There are many theories as to why this increase has occurred, but more research is required.

Cross reactivity is difficult to understand and harder to predict

Cross reactivity means that a similar protein is present in a range of different foods. If the same protein is present in several foods, then that person may have allergic reactions to *any* food containing that protein. Examples of cross reactivity include people allergic to similar proteins present in hen's egg and duck eggs; or cow's milk and goat's milk; or cashew nut and pistachio nut.

It is sometimes difficult to predict whether a person will be allergic to *one* unique protein allergen present in one food *only*, or *several* similar cross reactive proteins present in *multiple* foods, simply based on whether foods have a similar appearance. Therefore it is not possible to reliably predict the likelihood of allergy to seed or nut like food without allergy testing to that particular food.

Allergic reactions to peanut, tree nuts or seeds can sometimes be severe

Symptoms of food allergy typically include hives (urticaria), swelling around the mouth, and vomiting, usually within 30 minutes of eating a food. Other symptoms include stomach pains, or diarrhoea.

Symptoms of severe allergic reactions (anaphylaxis) affect our breathing and/or our heart and may include any of the following: difficult/noisy breathing, swelling of tongue, swelling/tightness in throat, difficulty talking/hoarse voice, wheeze or persistent cough, persistent dizziness and/or collapse, and becoming pale and floppy in young children. Information on anaphylaxis is available on the ASCIA website.

Deaths from food allergy are rare in Australia, but mild, moderate and even severe allergic reactions are common. The most common foods causing life threatening anaphylaxis are peanuts, tree nuts and shellfish.

Other allergies may also be present

Food allergy is more common in people who have other allergies such as allergic rhinitis (hay fever), asthma or eczema. As many children have allergies to other foods such as cow's milk, egg or other nuts, your doctor may test for these allergies as well.

Reliable diagnosis of food allergy is important

Your doctor will normally ask a series of questions that may help to narrow down the list of likely causes of allergy such as foods or medicines consumed that day, or exposure to stinging insects. This approach will also help to exclude conditions that can sometimes be confused with food allergy.

Skin or blood allergy tests help confirm or exclude potential triggers. While the results of allergy testing are a useful guide in determining whether the person is allergic, they are not a reliable guide to whether the reaction will be mild or severe. Information on allergy tests is available on the ASCIA website: www.allergy.org.au/patients/allergy-testing/allergy-testing

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Unorthodox so-called allergy tests are unproven

There are several methods of unorthodox so called tests for food allergy. Examples include cytotoxic food testing, Vega testing, kinesiology, allergy elimination techniques, iridology, pulse testing, Alcat testing, Rinkel's intradermal skin testing, reflexology, hair analysis and IgG food antibody testing. These have no scientific basis, are unreliable and have no useful role in the assessment of allergy. These techniques have not been shown to be reliable or reproducible when subjected to formal study. ASCIA advises against the use of these tests for diagnosis or to guide medical treatment. No Medicare rebate is available in Australia for these tests, and their use is also not supported in New Zealand.

Adverse consequences may also arise from unorthodox testing and treatments. Treatment based on inaccurate, false positive or clinically irrelevant results is not only misleading, but can lead to ineffective and at times expensive treatments, and delay more effective therapy. Sometimes harmful therapy may result, such as unnecessary dietary avoidance and risk of malnutrition, particularly in children. Information on these methods is available on the ASCIA website: www.allergy.org.au/patients/allergy-testing/unorthodox-testing-and-treatment

Peanuts, tree nuts and seeds are hard to avoid

Peanuts are widely used in processed Western foods and oriental cooking. This poses significant problems for people with severe peanut, tree nut or seed allergy. Laws require that any product containing peanut, tree nuts or sesame must be labelled to that effect. Therefore it is important to check the labels of all foods before purchase. Further information about reading food labels, food selection and allergen avoidance is available from the ASCIA dietary avoidance information sheets: <http://www.allergy.org.au/patients/food-allergy/ascia-dietary-avoidance-for-food-allergy>

Eating out with peanut or tree nut allergy

While you can never totally remove the risk of accidental exposure to your food allergic trigger, some simple precautions will dramatically reduce the risk. Contact your friends or the restaurant that you plan to visit in advance and let them know that you have a food allergy. When you arrive at the restaurant, ask to talk to the manager about any dishes that should be avoided, and ask them to let the chef know so they can take extra care in preparing your meal to reduce the risk of cross contamination. Don't just rely on the menu descriptions of what is in the food. Some people even have a small snack before they go out, not to replace the meal, but so that they are not so hungry as to eat any food put in front of them without thinking first.

There are many traps for the unwary. Remember that pesto and dips may have nuts as an ingredient. And many trendy salads have nuts or seeds added for texture. Sometimes nuts can be added to gravies and sauces too. Think of the methods of cooking and possible cross contamination and the likelihood of shared utensils and cookware.

In teenagers or adults who are eating out, cautiously touch test a small amount of the food on your outer lip before putting it into your mouth. Tell-tale warnings such as a burning, chilli-like reaction, tingling or swelling, should alert you to the possibility that food allergen is present.

Finally, if you have been prescribed an adrenaline autoinjector, always have it and your ASCIA Action Plan for Anaphylaxis with you.

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Other foods may also cause allergic reactions

Fortunately, the majority of peanut allergic people can eat other legumes with safety. There is some evidence that those allergic to peanut may be at increased risk of allergy to lupin, a bean (and another legume) that is sometimes added to baked goods like bread and sometimes confectionary as a source of protein. Its use in Australasia is currently less common than in Europe but at this time, its presence is not indicated on food labels in Australasia. It appears that some people who are allergic to both foods are allergic to the same proteins present in both foods (cross reactive response) whereas others may be allergic to distinctly different proteins in the different foods.

Other nuts and seeds can cause severe allergy

Even though there is little similarity between peanut allergens and those present in tree nuts (like walnut, almond, pecan, pistachio or cashew), there is an increased risk of other food allergies in peanut allergic children. Peanut/tree nut and seed avoidance strategies advised will largely be dictated by choking hazards in infants, the risks of cross contamination or substitution of one nut for another in commercially prepared foods, and the potential for confusion in young children (and care givers) trying to differentiate one nut product from another. For this reason, it is usually recommended that peanut allergic people avoid all nuts, and some doctors also recommend that they avoid seeds as well (e.g. sunflower seed, sesame seed or poppy seeds). Unfortunately it is not clear whether such advice will prevent new food allergies from developing.

Highly purified nut oil contains little allergen

Refined peanut oils (not cold-pressed) have been shown to be safe in small studies. Unfortunately, it is difficult to guarantee that the oil is sufficiently refined to remove all traces of peanut protein, which is the trigger for allergic reactions. This particularly applies to restaurants which use peanut oils for cooking, as peanut proteins may leach into the oil during cooking, and the oil may be reused a number of times. In general therefore, avoidance of peanut oil is frequently advised. When considering the safety of tree nut oils or seeds oils (like sesame), little work has been done in this area to prove safety, so in practical terms, it is often easiest to avoid nut oils too.

New allergies can develop

Some people with peanut or tree nut allergy will develop a new allergy over time to a similar or related food. While many people with a single peanut or tree nut allergy are often advised to avoid all nut like foods (and sometimes seeds as well), it is not clear whether this will actually prevent a new allergy from developing.

Avoidance is the only proven treatment for peanut, tree nut or seed allergy

The only proven treatment for peanut, tree nut or seed allergy at this time is avoidance of the allergen. It is therefore fortunate that omitting peanuts, tree nuts or seeds from the diet has no adverse nutritional consequences for most people. Children with food allergy should take their own food with them to school and encouraged not to swap or share food. In common eating and food preparation areas, where there are children with severe peanut or tree nut allergy, nut-containing foods are best avoided. In childcare centres and preschools with very young children where the risk of food contamination of common eating areas or toys is higher, some centres request that parents to do not send nut containing foods in the lunch box to reduce the risk. This is not a policy that is considered necessary when caring for older children, although the use of nut or seed containing foods in cooking classes and

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science experiments is discouraged if there are students with peanut or tree nut allergy in that class.

Further information about prevention of anaphylaxis in schools, preschools and childcare is available from the ASCIA website: www.allergy.org.au/health-professionals/papers/prevent-anaphylaxis-in-schools-childcare

Research into food allergy is ongoing

The increased frequency of peanut and tree nut allergy is driving research into areas trying to find out why it has become more common, and how to treat and prevent it. Current areas of research include studies to determine whether early exposure to peanut might actually reduce the risk of allergy developing (www.leapstudy.co.uk/index.html), trying to genetically engineer peanuts to remove the proteins that trigger allergies, or immunotherapy (desensitisation) to switch off the allergy once it has developed. Research continues to explore new ways of more effectively treating this condition.

ASCIA Action Plans are essential

The average nut allergic person will have an accidental exposure every few years, even when they are very careful to avoid the foods they are allergic to. The difficulties of avoiding peanuts, tree nuts or seeds completely make it essential to have an ASCIA Action Plan for Anaphylaxis when an adrenaline autoinjector has been prescribed.

For those who are not thought to be at risk of anaphylaxis and therefore have not been prescribed an adrenaline autoinjector, an ASCIA Action Plan for Allergic Reactions should be provided by your medical doctor. ASCIA Action Plans must be completed by a doctor and are available from the ASCIA website: www.allergy.org.au/health-professionals/anaphylaxis-resources/ascia-action-plan-for-anaphylaxis

Nut allergy can be effectively managed

The good news is that under the management of a medical specialist (clinical immunology/allergy specialist) and a network of supportive contacts, people with allergy to peanuts, tree nuts or seeds can learn to manage their allergies and live a full life. The knowledge that adrenaline autoinjectors are available offers reassurance, but is not a substitute for strategies to minimise the risk of exposure. Research continues to explore new ways of more effectively treating this condition. Patient support organisations such as Allergy & Anaphylaxis Australia (www.allergyfacts.org.au/) and Allergy New Zealand (www.allergy.org.nz) offer valuable updates and tips for managing food allergies.

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The Australasian Society of Clinical Immunology and Allergy (ASCIA) is the peak professional body of clinical immunology and allergy specialists in Australia and New Zealand.

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