

Introduction

The prevalence of allergic disorders such as hayfever, asthma, eczema and food allergy has significantly increased in many countries over the last 20 years. Food allergy reactions are becoming more serious, in some countries food allergy reactions are surpassing insect stings and patient administered medications as the most common cause of fatal allergic reactions (anaphylaxis).

Food allergy can appear at any age but true allergies to food are more common in infants and young children. Food allergies are the earliest manifestation of atopy (the tendency to develop allergy) in infants and children. A limited number of foods are responsible for the vast majority of food induced allergic reactions. In children the main foods are cow milk, egg, peanut, fish, tree nuts, wheat and fish. Atopic dermatitis (eczema) in infancy is frequently caused by food allergy usually to milk, egg and soy. In adults the main foods that result in allergic reactions are peanuts, tree nuts, fish and shellfish. Allergy symptoms vary from mild (mild skin rash or runny nose) to severe symptoms involving any of the body systems (skin, gastrointestinal tract, respiratory tract) or anaphylaxis the more severe and life threatening allergic reaction.

The main food culprit in anaphylaxis in both children and adults is peanuts accounting for the majority of all food allergy related deaths, tree nuts are next highest with the remainder due to milk and fish (AAAAI). The majority of these serious reactions occur in adolescents and young adults (2 – 33 years), with equal numbers males and females. Individuals at highest risk of fatal allergic reactions (anaphylaxis) are those allergic to peanuts, tree nuts, fish and shellfish, especially those with asthma.

Australian Data

In Australia approximately one in three individuals will develop allergies at some stage of their life with approximately 1/20 children and 1/100 adults developing transient food allergy, and 1 in 10 developing asthma. In Australia and SE Asia the most common food allergens are egg, cow milk & peanut. Atopic dermatitis in children is strongly associated with allergy to cow milk and peanut. A 2002 Australian Study (Woods et al) tested 1141 young adults (20 – 40 years) for evidence of food allergy and found an overall prevalence of 1.3%. Of these 0.27% were to wheat, 0.09% to cow milk & egg, 0.53% to shrimp and 0.61% to peanut. Those patients with peanut allergy were more likely to have a history of eczema and wheezing, while shrimp allergy patients were more likely to experience nasal allergy symptoms. Those with both peanut and

shrimp allergy were more likely to have current asthma symptoms (Hill et al 1999).

Around 4000 Australians per year have an anaphylactic reaction from insect stings or foods with between 10 and 20 of these being fatal. The most common foods causing life-threatening anaphylaxis are peanuts, tree nuts and shellfish. ([ASCIA Website](#)).

Food induced allergic reactions:

The skin: Acute urticaria (hives) and angioedema (swelling of soft tissues) are common symptoms of food allergy occurring within minutes of eating the food. An acute itchy red rash may occur lasting from within minutes to 2 hours after eating food.

The gastrointestinal tract. There maybe itching and/or swelling of the lips, tongue, palate and throat, abdominal pain, vomiting and/or diarrhoea. Food allergy may be a cause of infantile colic in about 10% - 15% of colicky infants. Other problems that may be in part due to food allergy include poor appetite, chronic diarrhoea and a failure to gain weight or 'failure to thrive'

The respiratory tract. Redness, itching and tearing of eyes as well as blocking, itching and watering of the nose and sneezing can occur (Rhinitis/Sinusitus). Sometimes chronic ear infections can be caused by food allergy. Food allergy may also be a trigger for asthma in children, but rarely in adults. (Sampson, 1999).

Anaphylactic shock is the most severe allergic reaction, involving many organs of the body, including the: Nose - sneezing, blocking, watering and runny nose, Upper airways - swelling of the throat and vocal cords leading to obstruction of breathing, Lungs - wheezing and asthma, Skin - itching hives (urticaria), Circulatory system - a fall in blood pressure and collapse. The most dangerous symptoms are breathing difficulties or a drop in blood pressure (shock), either of which can be potentially fatal (Sampson, 2001). In anaphylaxis the substances released during allergic reactions can have an effect on a) blood vessels causing a drop in blood pressure resulting in drowsiness, deteriorating consciousness or fainting, and b) the air passages causing swelling of the throat or asthma. These symptoms require emergency medical treatment.

Early warning signs of allergic reaction include oral and abdominal symptoms such as sensation itching or tingling in the mouth, tightness in the throat and nausea, abdominal cramping and vomiting. Symptoms may begin within minutes to hours after ingesting the offending food and become severe within 30 minutes to 2-3 hours.

Food allergy reactions can depend on the severity of the allergy, the amount of allergen eaten, what type of food (eg solid or liquid which is absorbed faster) and whether it is eaten on its own or mixed in with other foods. Exercise around the same time as the meal may worsen the allergy reaction severity and cooked food is sometimes better tolerated.

For a food allergy reaction to occur there must have been a prior exposure where the immune system becomes primed (sensitised) to react against this food. Each subsequent exposure to the allergen can increase the severity of the reaction. The foods that people react to are those foods most often eaten.

The routes of exposure to allergens are via inhalation, contact or ingestion. Although ingestion is the main route of exposure in food allergy, some highly peanut allergic individuals may experience adverse reactions to peanut from being close to another who has ingested peanuts. Skin contact with foods such as raw meat, raw fish, vegetables and fruit can also cause hives. Another type of allergy reaction that is worth noting is Exercise Induced Food Allergy. Here it is only when an individual eats a specific food within two hours prior to exercise. As the exercise increases the body temperature they begin to itch, get lightheaded and soon after have a full blown allergic reaction.

FOOD ALLERGENS

1. Peanuts and other legumes

Peanut allergy can cause hives (urticaria), eczema, swelling (angioedema), wheezing, choking, vomiting, runny nose, itching, difficulty breathing, nausea, asthma, tearing of eyes and in severe cases anaphylaxis. The majority of reactions are mild but in some individuals serious respiratory problems can occur.

Peanut is a strong allergen that persists over long period. It is a hidden allergen in many foods and can cause a serious and dramatic anaphylactic shock. The most important clinical peanut allergens are heat stable, and are less likely to breakdown during digestion or processing. Heating and roasting may actually enhance allergenicity. In highly allergic person extremely small amounts eg only 1/44,000 of a peanut kernel can prompt an allergic reaction.

Peanuts are not really nuts but part of legume group along with soybeans, green beans, peas, garbanzo & lima beans. Allergy (IgE) antibodies are produced against albumin the major allergen in legume seeds. Ripe beans (dried), peas and lentils are rich in the storage protein fraction albumin that is common to legumes. Although rare cross reactions to pea, kidney beans and lentils can occur in a peanut allergic individual. Approximately a quarter of Cow Milk Allergy patients also become allergic to soy protein. While soy sensitive children are not necessarily cow milk sensitive they may be pea and peanut sensitivity.

Peanut allergy in early childhood can lead to other allergies later in life. Early sensitization to peanuts is common, in a British study one third of the patients with peanut allergy were sensitized before age two, most often to peanut butter. Peanuts and peanut products are found in a wide variety of consumer products and are hard to avoid. Products that may contain peanut traces must be labelled so consumers should check labels before buying. This will include products that may contain traces of peanut due to cross contamination on the product line from other processed food sources. Peanut oil can also be found in some cosmetic products, possibly labelled as Arachnis oil (alternative scientific name). The presence of allergens in oil can vary depending on whether cold pressing or warm pressing.

2. Soy protein.

Soy allergy is common in infancy, often first experienced when a baby is given soy milk formula because of known cows milk allergy. Soy protein is found many processed foods, including baked goods such as bread, batters, cereals, sausages; as a binder in small goods and in salads and canned beans. Soy lecithin is an emulsifier (322) found in many foods such as chocolate, margarine, and carob. Other names for soy include soya, soy flour, soya protein, vegetable gum, textured vegetable protein, hydrolysed vegetable protein, lecithin, bean curd, soya bean paste (Miso, Tempe), and tofu.

3. Tree Nuts and Seeds:

Some contain allergens and can produce clinical symptoms of allergy. Examples of nuts and seeds that can produce allergy symptoms are Pine nut (anaphylaxis & urticaria), sesame seed, cottonseed protein, Almonds, Brazil nuts Cashews Chestnuts Hazelnuts Macadamia nuts Pecans Pistachios Walnuts. Many patients with nut allergies also have other common allergies

(96%).

4. Fish and Shellfish:

Seafood allergy includes fish such as cod, salmon, tuna or dory); crustaceans such as crab, prawns or lobster and molluscs such as shellfish - oysters, clams. Seafood allergy is more common in adults than children and is usually as a life-long problem. The fish and crustacean allergy proteins are common to many species and results in allergy to most other fish and crustaceans generally means that all should be avoided. Allergy symptoms most often experienced are nasal allergy symptoms and anaphylaxis.

Potential Sources of peanuts (and tree nuts)

Spreads and sauces

Sweets, cakes and biscuits

Eating Out and Savoury foods

- ·Peanut butter
- ·Crushed nuts in sauces
- ·Pesto is an Italian sauce made with nuts
- ·Bouillon and worcestershire sauce.
- ·Gravy, peanut butter maybe used as a shortening or oil
- ·Marzipan is a paste of ground almonds and sugar

·Health Food confectionery bars

·ALL cakes and pastries with unknown ingredients, particularly "health cakes" such as carrot cake, pump

·Biscuits, other than plain, sweet or savoury, (especially chocolate coated), need to be thoroughly checked

·Confectionery such as praline and nougat are nut products

·Chocolate, particularly compounded, as in Easter Eggs, health food bars, fancy and imported chocolate

·Ice cream and dessert

- ·Mixed nuts

·Hydrolysed Vegetable Protein

·Vegetarian dishes

·Asian foods eg; Satay, Indonesian and Thai Foods

·Salads and salad dressings

·Baked goods

·Spicy foods, particularly Asian foods as these may mask immediate sensation due to peanut allergy

·If you have severe peanut allergy do not eat foods if you do not know what they contain

·Nutmeg

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Alcoholic Drinks

Breakfast foods

Others

·Amaretto alcoholic drink used in cocktails

·Frangelico alcoholic drink is made from nuts sometimes used in desserts

·Muesli and fruited breakfast cereals. Ingredients need to be checked on all breakfast cereals.

·Food additive 322 - Lecithins - may contain peanut

·Shampoos, shaving cream, health care products may contain peanut and almond oil

·Sunscreen lotion

·Some brands of lipsticks and foundations

·Cosmetics containing Loramine Wax and Peanutamide (alternative names for peanut)

·Prometrium, a progesterone cream derived from peanuts (menopausal women)

·Animal and bird feeds. Requires attention when visiting farms, wildlife parks or feeding a pet bird at home

Diagnosis of food allergy.

Diagnosis of food allergy requires specialised medical knowledge and investigations such as through medical history, skin prick tests, food challenge tests and RAST blood tests for specific foods. Because there are so many causes of adverse reactions to food, it is important that these investigations are carried out under experienced medical supervision.

Treatment and Management of food allergy

Food allergy is managed by avoiding the offending substance. When infants and children are involved medical supervision is required to ensure that their nutritional needs are not compromised by elimination of certain foods. Prevention by eliminating offending foods is the far superior form of treatment than Anti histamines, corticosteroids, or asthma medications etc.

Treatment and Management of Anaphylactic Reactions

Epinephrine is the drug of choice to slow a potentially deadly anaphylactic reaction. Anaphylactic patients who are exposed to an allergic trigger may begin suffering from respiratory distress, which can quickly intensify, making breathing difficult or impossible. Severe symptoms include obvious respiratory distress, wheezing, cyanosis or loss of consciousness and the patient may require intubation (assistance with breathing).

Immediate Management of anaphylaxis includes

- Remove offending substance and minimise other co-factors – Ex spit out food, stop exercise
- Ensure patient does not choke or inhale vomit
- Promptly call for medical emergency assistance
- Inject adrenaline
- Observe for relapse under medical supervision for a minimum of 12 hours. Severe symptoms (rebound) recur in up to 20% of severe food allergic patients when additional allergen is absorbed

Factors that contribute to the development of allergies

- Family history of atopy
- Earlier or more frequent exposure to food allergens. This includes introduction of food allergens via the uterus and breast milk from the mothers diet, and foods introduced early in a childs life (1 to 5 years of age).

Why is there an increase in food allergy

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Early sensitisation

A UK study found that sensitisation (ie the initial exposure to the allergen) occurs in 92% of children before the age of seven with approximately 18% of these in 1st year and 53% before age 3. A 2001 study at the University of Toronto demonstrated that peanut protein is transferred from the maternal diet into breast milk and with approximately 80% of susceptible children developing an allergic reaction after 1

st

known sampling of peanut products. This suggests that the initial sensitising exposure may have come from breast milk.

Frequent exposure.

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Peanut and peanut products are found in a wide range of processed foods. In the US peanuts are consumed in the form of peanut butter (20%), candies & baked goods (16%), and the rest as processed oil using in cooking. When children develop food allergies it is usually in response to foods common in their diet **Hidden ingredients in food.**

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Unknown ingestion of foods containing the allergic ingredient There is an increasing use of protein additives in commercially prepared foods.. An American study tested 70 packaged food products including cereals, candies, snack food and bakery products and found peanut in 17% of products. Consumers must have an understanding of what various terms mean eg. alternative food ingredient names and food additives and their numbers.

Other contributing factors

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Lack of preventative measures.

Individuals at risk of anaphylactic reactions should wear some form of Medi Alert bracelet to alert those who are first on the scene as to the potential problem and if necessary carry epinephrine. Reactions often occur to food allergens ingested unknowingly while eating away from home. Factors that can contribute to fatal outcomes are denial by the patient of warning symptoms (eg itching mouth or throat), reliance on the ability of anti-histamines to control the reaction, not having a medi alert bracelet and failure to have epinephrine on hand or failure to administer epinephrine immediately after the onset of symptoms. A delay in administering epinephrine is most likely to be associated with fatal outcomes.

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Lack of information and a need for better education. The only treatment for peanut allergy (or any other food allergy) is avoidance.

Pregnant and breast feeding women need to be aware of the fact that what they eat can affect the development of allergies in their child. When shopping and eating out consumers need to be aware of what foods may contain peanuts or other food allergens.

Why is it important to educate the general public?

Allergies account for approximately 500,000 sick days per year in Australia, as well as days lost from school, and these allergy symptoms have an impact on quality of life, mood, learning ability and work performance. The Australasian Society for Clinical Immunology and Allergy (ASCI) estimates that allergic disease (including asthma) accounts for around 20% of health expenditure in Australia. The impact of food allergy on loss of productivity and reduced quality of life can be minimised by early intervention when the individual or parent is aware that constant ill health, mild or severe, may be in part due to specific foods in the diet. If the reactions are mild (eg runny nose, mild skin rash) action can be taken to eliminate the potential allergic food/s from the diet. If the symptoms are severe or persist medical diagnosis and treatment is required. When infants and children are involved medical supervision is required to ensure that their nutritional needs are not compromised by elimination of certain foods.

Anaphylaxis is a potentially life threatening reaction that can occur from ingesting only minute amounts of allergen and in some cases anaphylaxis can occur just from being around someone who has eaten the offending substance. Anaphylaxis symptoms may be mild and require little to no treatment or they could be life threatening. If previous reactions to allergens eg peanut have been mild this does not mean that the next one will be. In the UK it was found that people who died from nut allergy have often not had a particularly life threatening reaction before. Although anaphylactic reactions are rare they can be fatal.

What you can do

For General food allergy

Accurate identification of all foods to which the individual is sensitised is essential.

Parents and older children learn how to read and interpret lists of ingredients on packaged foods.

Petition for proper food labelling

Education – Educate yourself and others

- On the need to avoid peanuts and other allergens, and information on what products may contain the allergen.
- Parents, relatives, babysitters, child care workers, school teachers on the early warning symptoms: Most common itchy mouth, hands or feet.
- On preparing a plan of action should an anaphylatic reaction occur

For Young children and infants

Avoiding peanuts and nuts in young children, when sensitisation is most likely to occur, is suggested as a possible means of preventing these allergies.

Decrease exposure to common allergenic foods in infancy.

- Maternal avoidance of peanut, egg, fish and dairy products during lactation. This should only be done under medical supervision due to potential nutritional problems.

- Wheat, egg and fish NOT introduced until infant > 12 months
- Peanut and peanut products NOT introduced until child > 36 months
- Prepare for school excursions, parties, family outings by either making lunches and snacks or making special arrangements with those catering for the event

For Anaphylaxis risk

When children are involved, education of the child, school personnel, day care providers and restaurant personnel about food induced anaphylaxis.

Obtain and learn how to use an emergency kit containing epinephrine

Obtain and wear a medi alert bracelet [Medic Alert Australia](#)

More information on anaphylaxis

Guidelines for the prevention, recognition and management of anaphylaxis in childcare and school sites. The Australasian Society for Clinical Immunology and Allergy (ASCIA) Position Paper. ASCIA Member Services: Patient Information Bulletin The Australasian Society for Clinical Immunology and Allergy (ASCIA)

www.allergy.org.au

A support group for parents of children suffering from food-induced anaphylaxis has been established called FACTS (Food Anaphylactic Children Training & Support Association). This is a voluntary non-profit organization that provides information, support and a regular newsletter to families with food -anaphylactic children. The coordinator is Meg Johnson, FACTS, 16 Lumeah

Avenue, Elanora Heights NSW 2101, telephone 02-9913 7793. Their web site at www.allergyfacts.org.au .

[Medic Alert Australia](#)

More information on Food Allergens

Understanding food labelling and hidden ingredients is important to managing food allergy. Patients must be given advice about reading and understanding food labelling concerning ingredients and food additive numbers. There are many hidden ingredients in processed food, and labelling may not be helpful or may be actually misleading. National Health and Medical Research Council (NHMRC) approved additive numbers are found in the pamphlet 'Identifying Food Additives' available from the Department of Human Services and Health, G.P.O. Box 9848 in your Capital City.

References

American Academy of Allergy, Asthma and Immunology (AAAAI)

Bradley C. 2000. Atopic Diseases in Children: New Strategies for Prevention and Treatment American Academy of Allergy, Asthma and Immunology 56th Annual Meeting Day 2 - March 5, 2000

Sampson HA, 1999. Food allergy. Part 1: immunopathogenesis and clinical disorders. J Allergy Clin Immunol: 103; 717-728

Sampson HA, 2001. J Allergy Clin Immunol: 107; 191-193

Hill DJ., Hosking CS, Heine RG. 1999. Clinical spectrum of food allergy in children in Australia and South-East Asia: identification and targets for treatment. *Ann Med*: 31(4); 272-281

Woods RK, Thien F, Raven J, Walters EH, Abramson M. 2002 Prevalence of Food Allergies in Young Adults and Their Relationship to Asthma, Nasal Allergies, and Eczema. *Annals Allergy, Asthma & Immunology*: 88(2); 183-189

Ewan P. 1996. Clinical study of peanut and nut allergy in 62 consecutive patients: new features and associations. *Brit Med J*: 312; 1074-1078

The Australasian Society for Clinical Immunology and Allergy (ASCIA). www.allergy.org.au

FACTS A support group for food-induced anaphylaxis. Coordinator Meg Johnson, 02-9913 7793. www.allergyfacts.org.au .

Yunginger JW. 1992. Lethal Food Allergy in Children. *NEJM*: 327(6); 421-422

Sampson HA, Mendelson & Rosen JP. 1992. Fatal and Near-Fatal Reactions to Food in Children and Adolescents. *NEJM*: 327(6); 380-384.

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