australasian society of clinical immunology and allergy inc.

# ANAPHYLAXIS TRAINING RESOURCES

***for educators and allied health professionals***

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The content of this document has been reviewed by ASCIA members, represents the available published literature at the time of review, is not influenced by its sponsors and is not intended to replace professional medical advice. Any questions regarding a medical diagnosis or treatment should be directed to a medical practitioner.

For further information on allergy, asthma or immune diseases visit www.allergy.org.au - the website of the Australasian Society of Clinical Immunology and Allergy (ASCIA). ASCIA is the peak professional body of Allergy Specialists and Clinical Immunologists in Australia and New Zealand.


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## INTRODUCTION

The purpose of this resource is to provide information for educators and allied health professionals about the prevention, recognition and first aid management of anaphylaxis.

This resource was developed by the ASCIA Anaphylaxis Working Party (AWP), whose membership is from most of the states and territories in Australia and from New Zealand. The members of the ASCIA AWP include clinical immunologists and allergists (allergy specialists), nurse allergy practitioners and a member of Anaphylaxis Australia.

The aim was to provide basic information which is accurate, easy to understand and could be used to provide the knowledge required to educate others.

Links to additional web based information is provided and this includes material that has been developed by ASCIA.

It is hoped that the material contained in this document will be used widely.

The content is not subject to copyright, but if used the source should be acknowledged.

It is the intention of the ASCIA AWP to update this information to include current information.

## CHAPTER 1 - BACKGROUND INFORMATION ON ALLERGIC REACTIONS & ANAPHYLAXIS

- An allergy is when someone has a reaction to something (usually a protein) which is either ingested, inhaled, injected or placed on the skin.
- Symptoms of an allergic reaction may be local or general.
- Anaphylaxis is the most sudden and severe form of generalized allergic reaction.
- Food, medication and insect venom are the commonest severe allergic triggers.
- Asthmatic individuals have more severe allergic reactions if they have an underlying food, medication, or insect venom allergy.
- Anaphylaxis is not uncommon, but death from anaphylaxis is very rare.
- Death from anaphylaxis usually occurs in adolescents and adults who have asthma.

### WHAT IS AN ALLERGIC REACTION ?

An allergy is when someone has a reaction to something (usually a protein) which is either ingested, inhaled, injected or placed on the skin**.** Allergic reactions occur because something has gone wrong with the immune system. The immune system is designed to protect us from infections and cancer. In order to do this the immune system needs to tell which substances or cells are harmless and which may cause harm. Sometimes (in people who have allergies) the immune system gets it mixed up and mistakes a harmless substance (ignored by most people's immune system) for something that may cause damage. This results in an allergy.

The substance(s) that may cause an allergy in some people is called an allergen. In the most common form of allergic reaction affected people start to produce antibodies, called IgE, which can recognise these allergens. For someone with an allergy, when they are exposed to an allergen, there is an interaction between the allergen and the IgE antibodies which results in allergy cells (mast cells) releasing chemicals, such as histamine. These chemicals in turn affect many other tissues and cells in the body to cause the allergic symptoms.

### SYMPTOMS OF AN ALLERGIC REACTION

Symptoms of an allergic reaction range from mild and annoying through to serious and potentially life threatening. The reaction occurs when an allergic person is exposed to an allergen. The reaction may affect many organs of the body and these include the skin, respiratory tract (nose, throat and lungs), gastrointestinal system, and cardiovascular system (blood vessels).

Allergic symptoms may only occur <u>locally</u> and where the allergen has had contact with the body. For example, large local swelling and redness may occur at the site of a bee sting and where the venom has been injected. Some allergic reactions are <u>generalised</u> and result in a generalised skin rash and/or affect organs in the body which have not directly been exposed to the allergen. When a generalised allergic reaction affects the respiratory and/or cardiovascular system this is then called <u>anaphylaxis.</u>

## ALLERGIC TRIGGERS CAN BE INHALED, INGESTED, INJECTED OR CONTACT THE SKIN

The most common inhaled allergic triggers in Australia are the airborne allergens - dust mites, pollen, mould spores, cat and dog allergens. Food allergens and medications are most often ingested triggers and insect venom and some medicines are injected triggers. Contact allergic reactions can occur to food and medications. Uncommonly, there may be other triggers and these include latex products and exercise.

### AIRBORNE ALLERGENS

Skin contact or inhalation of an airborne allergen can lead to symptoms of skin rash, swelling of the eyes, hay fever and wheeze. Airborne allergens are not generally regarded as a trigger for anaphylaxis.

### FOOD ALLERGENS

Any type of food can trigger an allergic reaction. However, the vast majority of allergy reactions are triggered by egg, cow's milk (dairy foods), peanuts, tree nuts, soy, wheat, seeds, and seafood. Egg and dairy are the most common triggers in infants whilst peanuts, tree nuts and seafood are the most common triggers in older children, adolescents and adults. This is because egg and dairy allergy frequently resolve with age. Symptoms to food additives (preservatives and artificial food colourings) are commonly reported by parents, but these substances rarely trigger anaphylaxis. Food may trigger reactions which range from local contact reactions through to generalised reactions, including anaphylaxis.

### INSECT VENOM

The stinging insects include bees, wasps and ants. The venom for each of these insects is different. Being allergic to one insect venom does not mean that an allergy will occur to one of the other insects. Reactions range from large local reactions (with extensive swelling which may last a number of days) to immediate and generalized reactions. Most insect stings occur in children but most severe reactions occur in adults over 35 years of age.

### MEDICATION

Any medications, including natural and herbal products, may trigger an allergic reaction. Antibiotics (usually penicillin) are the most common reported trigger for medication allergy. Medications may trigger an allergic reaction at any age.

### OTHER TRIGGERS

Allergy to the latex in rubber products (usually balloons or gloves) is a trigger for allergy in individuals who are at risk through occupational exposure to latex or in some children who are at risk because of numerous surgical procedures in early life.
In adolescents and adults exercise rarely triggers allergic reactions, including anaphylaxis.

## ALLERGIC REACTIONS ARE COMMON AND SOME ALLERGIES APPEAR TO BE INCREASING

Food allergy affects around 1 in 100 children and 1 in 30 infants. A similar number of people are at risk of severe allergic reactions to stinging insects. The risk to stinging insects is probably higher in rural areas where exposure is more frequent. It has been well documented that nut allergy has also become more common in the past generation in countries where nut allergy and atopic disease is common. It is not clear if other food allergies such as cow's milk and egg are also increasing. The reasons why nut allergy has become more common is not known.

## SOME ALLERGIES RESOLVE WITH AGE

### FOOD

Most food allergies to dairy products, soy, wheat and egg will resolve with age, even when the original allergy was serious. Young children should therefore be regularly reviewed by an allergy specialist to see if they have grown out of their allergies. For those with severe allergic reactions to multiple foods it is less likely that these allergies will resolve. Only 10-20% of people allergic to peanuts, tree nuts or seeds grow out of their allergy. Seafood allergy is usually a life-long problem.

### INSECT VENOM

Most adults and some children with serious allergic reactions to insect venoms usually remain sensitive for many years after their last sting, sometimes for decades. Unfortunately it cannot be predicted which people will outgrow their insect venom allergy.

### MEDICATION

Medication allergy is usually life long and requires evaluation by an allergy specialist to determine if this has resolved.

## ALLERGIC REACTIONS & THE ATOPIC DISEASES (ECZEMA, ASTHMA & HAY FEVER)

Eczema, hay fever (allergic rhinitis) and asthma are called the atopic diseases.
These conditions are caused by an inappropriate inflammatory reaction in the body.
For eczema this occurs in the skin, hay fever in the nose and asthma in the lungs.
The exact reason why some individuals develop these conditions is not known but "genetic make-up" is important. This is the reason why the atopic diseases tend to run in families. However, exposure to certain environmental conditions probably in the young child is also important.

The atopic diseases are common in Australia and New Zealand, affecting around one in three people at some time in their lives. In countries which are developed and westernised the atopic diseases have been increasing over the past decade. The time that the atopic diseases present in peoples' lives usually follows a predictable course. Eczema usually presents in the first year of life and improves by five years of age. Asthma mostly presents in the pre-school and school years whilst hay fever generally develops in the older child, adolescent and adults.

Allergic reactions may trigger symptoms in individuals who have eczema, asthma or hay fever. For example, in someone with an existing atopic disease who has been sensitized to cats being exposed to a cat may trigger symptoms of hay fever and asthma.

Some allergies are more common in individuals who have an atopic disease. For example, food allergies are more common in children who have eczema. However, allergies to insect venom and medications are not more common in individuals who have an atopic disease.

Allergic reactions to food, insect venom and medication may be more severe in individuals who have asthma compared with those individuals which do not have asthma.

## ANAPHYLAXIS

When a generalised allergic reaction affects the respiratory and/or cardiovascular system this is then called anaphylaxis. Anaphylaxis is the most severe form of an allergic reaction. Although different authorities may have different definitions for anaphylaxis the definition that is used most often in Australia and New Zealand is that of;

Anaphylaxis is a generalised allergic reaction that:

- has symptoms and/or signs that indicate that the respiratory (lungs) and/or cardiovascular system (blood vessels) have been affected (see Chapter 2- recognizing anaphylaxis).
- usually occurs soon after exposure to the allergen trigger, with progression of symptoms and signs**.**
- usually involves more than one body system, for example, the skin and lungs.

## ANAPHYLAXIS IS NOT RARE

Population surveys in North America and Europe suggest one new case of anaphylaxis occurs for every 5000– 8000 people in the population each year. This would equate to 2500-4000 new cases per year in Australia. Other studies in North America have found that 1 in 200 adults are prone to anaphylaxis to nuts. Studies in Australian children have shown that 1 in 166 children have had at least one episode of anaphylaxis in the past. One in 6 episodes of anaphylaxis have occurred in school or childcare (where they spend much of their time).

## DEATHS FROM ANAPHYLAXIS ARE RARE

Death from anaphylaxis is very rare. Hospital data suggest that the risk of death from any one episode of anaphylaxis is less than 1%. Approximately 10 people die each year in Australia from anaphylaxis, most commonly after exposure to medication or blood transfusions, sometimes to insect stings and rarely to food. Most deaths following insect stings occur in adults over 35 years of age. Death from anaphylaxis is very rare in children less than 5 years of age.

## RISK OF DEATH

Recorded deaths from food allergy show that these are most common in teenagers or young adults, who have asthma and who do not receive adrenaline soon after the onset of anaphylactic symptoms.

## DIAGNOSING ANAPHYLAXIS IS IMPORTANT

Recording of all symptoms and/or signs during a generalized allergic reaction is important because this will allow anaphylaxis to be differentiated from a generalized allergic reaction. This may be important later, for example, as diagnosis of anaphylaxis helps distinguish between severe allergic reactions and similar mimicking conditions such as non-allergic hives or asthma. This allows doctors to decide if people need to carry emergency medication.

## CHAPTER 2 – RECOGNITION OF ANAPHYLAXIS

The key features of anaphylaxis are;

- a generalized allergic reaction with respiratory and/or cardiovascular involvement
- involvement of many parts of the body
- rapid onset and progression.

It is very important to recognise the symptoms and signs of an allergic reaction and to determine if this has progressed to anaphylaxis. The main features of anaphylaxis are;

### 1. GENERALISED ALLERGIC REACTION WITH SYMPTOMS OR SIGNS OF RESPIRATORY AND/OR CARDIOVASCULAR INVOLVEMENT

Allergic reactions may be limited to the following and these symptoms may precede the onset of anaphylaxis or may occur as part of the reaction;

- Swelling of face, lips and eyes
- Congestion and watering of the nose and eyes
- Hives or welts on the skin
- Headaches, anxiety, flushing

**The following indicates that there is involvement of the lungs or blood vessels;**

- Difficulty/noisy breathing
- Swelling of tongue
- Swelling/tightness in throat
- Difficulty talking and/or hoarse voice
- Wheeze or persistent cough
- Chest tightness
- Abdominal pain, nausea, and vomiting
- Confusion
- A drop in blood pressure, loss of consciousness and/or collapse, or cool sweaty skin with a feeble/thready pulse (“shock”)
- Pale and floppy (in young children)

### 2. INVOLVEMENT OF MANY PARTS OF THE BODY

In addition to affecting the respiratory and/or cardiovascular systems, anaphylaxis almost always affects other organs in the body. Most often this is the skin (skin rash) but when food is the trigger this may be the gastrointestinal system (abdominal pain vomiting and diarrhoea). In some people (particularly with severe insect allergy) there can be a sudden collapse (due to low blood pressure) or severe breathing difficulties, without any other features.

### 3. RAPID ONSET AND PROGRESSION

The symptoms of anaphylaxis develop rapidly and progress after exposure to the trigger. It is rare for symptoms to be delayed for hours after exposure.

## CHAPTER 3 – FIRST AID MANAGEMENT OF ANAPHYLAXIS

- All individuals who have had a previous episode of anaphylaxis should have a first aid anaphylaxis action plan.
- The most important treatment for anaphylaxis is adrenaline.
- The EpiPen is an adrenaline auto injector device – if this is prescribed it is essential to have an anaphylaxis action plan and to know how to use the EpiPen.

### FIRST AID

First aid management of anaphylaxis describes the management of anaphylaxis that occurs outside of the hospital and should be started as soon after the onset of symptoms as possible. Like all first aid measures this is primarily administered by individuals who are not health professionals (for example, parents and teachers).

### FIRST AID MANAGEMENT OF ANAPHYLAXIS – first presentation of anaphylaxis

Anaphylaxis may present for the first time in the setting of school, work-place or child care facilities. Under such circumstances there will not be any existing first aid anaphylaxis management plan. Recognition of the signs and/or symptoms as being anaphylactic may also be a problem. The following steps should be followed;

1. Seek emergency medical assistance (eg call an ambulance).

2. Lay the person flat and elevate the legs if the person is dizzy or seems confused or has a reduced level of consciousness, unless this makes it more difficult for the person to breath.

3. Follow standard resuscitation measures (ABC) if there is no pulse, no breathing or loss of consciousness - If oxygen is available give at a high flow rate.

### FIRST AID MANAGEMENT OF ANAPHYLAXIS – recurrent episodes

It is not uncommon for recurrent episodes of anaphylaxis to occur following the first presentation of anaphylaxis. Studies show that 10-20% of these episodes may occur in the child-care setting. Under such circumstances there should be an anaphylaxis action plan which can be followed. The following steps should be followed;

**1. BEING PREPARED**

For individuals with anaphylaxis and parents, or those who care for individuals with anaphylaxis should be prepared by;

- knowing their allergic trigger/s
- knowing how to avoid the trigger/s (if possible)
- being able to recognise the early symptoms of an allergic reaction and anaphylaxis
- having a first aid anaphylaxis plan. This may include having an automatic adrenaline injector device (EpiPen) available – it is important to know how to use the device.

## 2. IF ANAPHYLAXIS OCCURS FOLLOW THE FIRST AID ACTION PLAN

Follow the first aid anaphylaxis action plan which should include the following;

1. Seek emergency medical assistance (eg call an ambulance).
2. Lay the person flat and elevate the legs if the person is dizzy or seems confused or has a reduced level of consciousness, unless this makes it more difficult for the person to breath.
3. Use the EpiPen as detailed on the action plan;
   - This is usually recommended at the first sign of any respiratory and/or cardiovascular symptoms (see list on action plan).
   - In some cases patients may be given instructions to inject the EpiPen immediately after exposure to the trigger or at the onset of any symptoms.
4. Follow standard resuscitation measures (ABC) if there is no pulse, no breathing or loss of consciousness - If oxygen is available give at a high flow rate.

### AFTER AN EPIOSDE OF ANAPHYLAXIS

- Seek emergency medical help even if the EpiPen relieves symptoms or symptoms resolve without any treatment.
- Stay in medical care under continuous observation for 4-6 hours after abnormal symptoms and signs have resolved.
- If an EpiPen has been previously prescribed and used;
  - Renew the EpiPen, if use, as soon as possible (In Australia, under the current PBS authority scheme any medical practitioner can obtain a repeat PBS EpiPen script if the EpiPen has been used).
- If an EpiPen has NOT been previously prescribed;
  - Obtain an EpiPen from the treating doctor. The way this will be obtained after the first presentation of anaphylaxis will vary (see information on how to obtain an EpiPen).
  - If an EpiPen is prescribed for the first time this needs to be provided with an anaphylaxis action plan which includes instruction of how to use the EpiPen.
- Document the circumstances of the reaction and include the following
  1. the trigger, if known
  2. the symptoms that occurred
  3. the treatment administered including use of the EpiPen
  4. any other important information.
- Obtain medical follow-up if required to discuss the event. This is essential if this is the first episode of anaphylaxis.

### ANAPHYLAXIS ACTION PLANS ARE ESSENTIAL

Episodes of anaphylaxis are often unpredictable, so all people who have been assessed by their doctor to be at high risk of anaphylaxis should have an anaphylaxis action plan.
Action plans (for completion by the doctor) can be downloaded from the ASCIA website www.allergy.org.au . As symptoms can vary between different people it is important that an individual's anaphylaxis action plan is followed (including their 'special instructions').

## ADRENALINE (EPINEPHRINE)

Adrenaline is the *only* medication proven to reverse the symptoms of anaphylaxis. Adrenaline acts as a natural "antidote" to some of the chemicals released during severe allergic reactions and works rapidly to reduce throat swelling, open the airways and maintain blood pressure. Adrenaline must be injected and cannot be taken by mouth.

## RISKS AND SIDE EFFECTS OF ADRENALINE

Palpitations (fast strong heartbeat), tremor, general pallor or blanching at the site of injection are the main side-effects experienced after adrenaline is injected. Adrenaline is well tolerated in children and when given as specified on an action plan, the benefits would always outweigh the side effects. Serious side effects have only resulted from excessive doses given, usually into a vein and in older adults (this is very unlikely to occur with the EpiPen). There are no absolute contraindications to using adrenaline to treat anaphylaxis. For people requiring adrenaline and taking any form of blood pressure or heart medication, the relative risk and benefits of adrenaline use should be considered in consultation with their allergy specialist and/or cardiologist.

## ADRENALINE TREATMENT OF ALLERGIC REACTIONS

Not all allergic reactions are dangerous. The decision to prescribe adrenaline will be based on a number of factors and be decided by an allergy specialist in consultation with a patient or their parents. Guidelines for EpiPen prescribing have been published (Appendix A).

## USE OF OTHER MEDICATION

Adrenaline is the most important drug to use for the first aid treatment of anaphylaxis, and must not be delayed by giving antihistamines, corticosteroids or asthma medications, which have no effect on the immediate and dangerous effects of anaphylaxis. Oxygen should also be given at high flow rates to people having severe reactions, if this is available. Intravenous fluids may also be required if the blood pressure is low, but these will be given by paramedics or medical staff.

## EPIPEN$^{R}$

The EpiPen$^{R}$ is a disposable, pre-loaded automatic injecting device that delivers one measured dose of adrenaline. The device has a spring activated and concealed needle designed to be self-administered or administered by people without formal medical or nursing training. The EpiPen is simpler to use than using a conventional syringe. Currently the EpiPen is the only auto-injector device available in Australia – however it is anticipated that other products may become available in the future.

## EPIPEN DOSE

Australasian allergy specialists have recommended that ***EpiPen Junior (150ug)*** be given to a 10-20 kg child. ***EpiPen*** (**300ug**) is given when weight exceeds 20 kg. For children who weigh less than 10 kg appropriate management needs to be discussed with that child's allergy specialist. Occasionally, anaphylactic symptoms may return after an EpiPen is given. If this occurs it may be necessary to give an additional EpiPen (if available) after 5-10 minutes if needed. In hospital treatment or treatment by paramedics may involve additional doses of adrenaline if symptoms of anaphylaxis are ongoing.

## NUMBER OF EPIPENS

The current PBS Authority Scheme in Australia allows for provision of one EpiPen at a time for adults and two EpiPens at a time for children aged 17 years or less (one at school and one at home). Currently 17 year olds still at school would only qualify for one EpiPen. Additional EpiPens can be purchased from chemists without prescription, but at the full cost of the EpiPen. In New Zealand the EpiPen is not government funded. The least expensive way to obtain an EpiPen is for it to be ordered directly from the supplier (CSL, Auckland, NZ) by a doctor.

## HOW TO USE THE EPIPEN

The steps on how to use an EpiPen are detailed on the action plan and are as follows;

- Hold the EpiPen in a fist like grip
- Remove the grey safety cap
- Press the black end firmly into the upper outer thigh until a click is heard or felt
- Hold in place for 10 seconds
- Remove and discard preventing needle stick injury

Further instruction on how to use the EpiPen can be obtained from;

- The doctor who prescribed the EpiPen
- Anaphylaxis action plans - these contain pictures and instructions and should be kept with the EpiPen
- The Australasian Society for Clinical Immunology and Allergy (ASCIA) website: http://www.allergy.org.au
- Consumer medicine information for EpiPen and EpiPen Jr also include pictures and a step-by-step guide.

EpiPen Trainers (which no not have a needle nor contain medicine) can be used for practice.

## SITE OF ADMINISTRATION

The EpiPen should be injected into the muscle of the outside of the mid thigh. Injecting here makes it extremely unlikely that damage to any nerves or tendons will occur or that it will be accidentally injected into an artery or vein. It is also the least painful part of the body to give an injection. The injection can be given through light clothing if it is too difficult to remove this.

## EPIPEN STORAGE

The EpiPen should be stored in a cool dark place at room temperature - but ***NOT*** refrigerated.
The EpiPen should be readily available when needed and not in a locked cupboard.
It should be kept out of the reach of small children.

## EPIPEN EXPIRY

The shelf life of EpiPen is normally 12-18 months from the date of manufacture. The expiry date needs to be marked on a calendar and replaced prior to this date. Expired EpiPens are not as effective when used for treating allergic reactions. However, an expired EpiPen should be used in preference to not using an EpiPen at all. The EpiPen has a clear window near the tip where you can check the colour of the drug – if it is clear (not brown or cloudy or containing sediment) it is safe to use.

## DISPOSAL OF THE EPIPEN AFTER USE

After the EpiPen has “fired”, the needle is exposed and could cause injury.

After use, continue to handle the EpiPen safely and with care, even if you think the EpiPen has not worked properly. The EpiPen cannot be reused even though some adrenaline remains inside the device. The used EpiPen should be placed in a rigid sharps disposal unit, or another rigid container if a sharps container is not available.

## CHAPTER 4 – LONG TERM MANAGEMENT OF ANAPHYLAXIS

### AVOIDANCE OF OFFENDING ALLERGENS IS THE KEY TO PREVENTION OF ANAPHYLACTIC REACTIONS

### PRINCIPLES OF LONG TERM MANAGEMENT OF ANAPHYLAXIS

All individuals who have had an anaphylactic reaction should have a medical review, preferably by an allergy specialist. The principles of management are outlined below;

- Identification of avoidable triggers
  - This involves a history, allergy testing (if appropriate), and challenge tests, in some occasions to confirm food allergy

- Education on avoidance of triggers
  - Avoidance is the only means of preventing some allergies such as food and drug allergy

- Risk assessment
  - This is to assess the risk of a recurrent reaction and the possible severity of recurrent reactions

- Provision of an emergency anaphylaxis action plan
  - This is essential for first aid management

- Reassessment
  - A regular review may be required to determine if the allergy is still present and to review prevention strategies and first aid plans.

### IDENTIFYING THE CAUSE OF ANAPHYLAXIS IS IMPORTANT

An allergy specialist should assess most cases of anaphylaxis. Diagnosis involves a series of questions to help narrow down the list of likely causes. This will also help to exclude conditions that can sometimes be confused with anaphylaxis, like fainting attacks or epileptic fits. An allergy specialist will also address concerns and anxiety about the risks of accidental ingestion and potential reactions, which can be debilitating and restrictive, adversely affecting well-being and quality of life. A dietitian is important in the management of food allergy to educate about avoidance of the food allergen.

### ALLERGY TESTING CAN CONFIRM OR EXCLUDE TRIGGERS

If allergy is suspected, tests for allergen specific IgE (skin or blood tests) are normally performed to help confirm or exclude potential triggers. Some alternative methods also claim to test for allergies but they are unproven and provide unreliable and misleading results.

## MANAGEMENT OF FOOD ALLERGY

With food allergy there are no symptoms ***without*** contact with the offending food. Avoidance of the food is the only effective measure to prevent food allergy, even in severely allergic individuals. Antihistamines cannot be relied upon to prevent anaphylaxis or hives in food allergy. In some cases of mild food allergy such as oral allergy syndrome (with itching only in the mouth) antihistamines can be used. Some people may avoid foods needlessly because they have "grown out" of their food allergy or were incorrectly diagnosed. Unnecessary food avoidance can adversely affect nutrition, particularly in children. Not all allergies have the potential to cause serious anaphylaxis, and allergic reactions do not necessarily continue to get worse with each exposure.

## FOOD LABELS NEED TO BE READ CAREFULLY

In Australia and New Zealand it is mandatory for food containing milk, egg, crustacea, fish, peanuts, tree nuts, soybeans, sesame seeds, gluten or sulfites to state these ingredients on the label. However there may be risks in consuming unlabelled foods, such as bakery products and eating at restaurants and other food outlets. Food allergic individuals should not hesitate to ask food vendors to specify if any of the relevant ingredients are present in the products. Some less common allergens may still remain hidden and education is important.

## EPIPEN FOR EMERGENCY MANAGEMENT OF FOOD ANAPHYLAXIS

In cases where the food allergen is very uncommon or obvious, some individuals (usually adults) may rely upon avoidance and not carry an EpiPen. However it is accepted that in most people there remains a risk of accidental exposure to the food (failure of avoidance). For this reason they should carry an EpiPen and know what to do in an emergency.

## FOOD ALLERGY - SCHOOL AGE AND PRESCHOOL AGE CHILDREN

Children and those responsible for their care should be taught to manage food allergies. Steps necessary for successful avoidance depend on the age and ability of the child. Children with food allergy should ***not*** be excluded from school or preschool activities. The individual and carers need to read food labels carefully, be aware of unlabelled foods which may contain the relevant allergen and be aware of sources of possible exposure to the relevant foods. At home the child must not have ready access to known allergenic foods.

## FOOD ALLERGY IN OLDER CHILDREN

As children get older they need to be know what foods may contain the allergen and learn to read food labels for themselves. The process of the older child learning to take responsibility is very important as they are increasingly away from the influence of older responsible adults.

## PREVENTION OF FOOD REACTIONS AT SCHOOLS AND PRESCHOOLS

There are four steps which are required to prevent reactions at school and pre-school;

- obtain medical information about children at risk of anaphylaxis (by school or preschool staff)
- education of carers concerning the risk of food anaphylaxis
- implementation of practical strategies to avoid exposure to known triggers
- age appropriate education of children with severe food allergies.

## RECOMMENDED GENERAL MEASURES

The following general measures may help in preventing accidental exposure in a child with a food allergy;

- no trading and sharing of food, food utensils and food containers
- children with severe food allergies should only eat lunches and snacks that have been prepared at home
- bottles, other drinks and lunch boxes provided by the parents for their children should be clearly labelled with the name of the child for whom they are intended
- restrict use of food in crafts, cooking classes and science experiments, depending on the allergies of particular children
- food preparation personnel should be instructed about measures necessary to prevent cross contamination during the handling, preparation and serving of food – such as careful cleaning of food preparation areas and utensils when preparing allergenic foods
- the risk of a life threatening anaphylaxis from casual skin contact even with highly allergenic foods such as peanuts appears to be very low, but can cause hives - hand and bench-top washing are considered appropriate.
- food removal from preschool settings should only occur following recommendation by a relevant specialist and the provision of documentation of this recommendation
- increased supervision on special occasions when usual strategies cannot be strictly followed such as excursions, special preschool or school days, camps, sports carnivals
- where toddlers attend sites a baby with severe food allergy within a childcare setting may have their own high chair to minimise the risk of cross contamination
- in a centre where there is a child with a severe milk allergy, non allergic babies must be held by a childcare worker when they drink their formula/milk

## FOOD ALLERGY - MEASURES SPECIFIC TO KINDERGARTENS, DAY CARE & PRE-SCHOOLS

***Where meals are brought from home the following measures are advised;***

- remove highly allergenic foods where transfer from one child to another is likely (e.g. whole eggs or egg containing foods and peanut products)
- parents of all children should be asked not to send meals containing highly allergenic foods such as egg and nut products to child-care centres, kindergartens and preschools where there is a child at risk of anaphylaxis to these foods
- it is realized that it is not possible to eliminate all food products such as milk products in bread or margarines from the foods brought to kindergartens and preschools
- in some circumstances it may be appropriate that a highly allergic child does not sit at tables where the food to which they are allergic is being served.

## FOOD ALLERGY - MEASURES SPECIFIC TO KINDERGARTENS, DAY CARE & PRE-SCHOOLS

***Where meal preparation is undertaken at child-care centres and preschools the following measures are advised;***

- for severely allergic children the best option may be to bring meals prepared from home
- if meals are prepared at the centre for a child at risk then the meal prepared for all children should not contain the ingredients such as milk, egg and nut products to which the child is at risk
- meals prepared at preschools which contain ingredients with 'may contain traces of nuts' on a label should not be given to nut allergic children
- food removal from preschool settings should only occur following recommendation by a relevant specialist and the provision of documentation of this recommendation.

## FOOD ALLERGY - MEASURES SPECIFIC TO SCHOOLS

The following general measures may help in preventing accidental exposure in a child with a food allergy attending school;

- risk minimisation with regard to particular foods (peanuts and tree nuts) is indicated, however, the implementation of blanket food bans or attempts to prohibit the entry of food substances into schools is not recommended
- for schools where there are children with severe allergies to nuts (peanuts and tree nuts) a risk minimisation policy for school canteens should be implemented. This involves removal of items with the relevant nut as an ingredient, but does not apply to those foods labelled 'may contain traces of nuts'
- risk minimisation in schools may also include asking parents of classmates not to send peanut butter on sandwiches if a class member in early primary years has peanut allergy - due to the higher risk of person to person contact in younger children and the increased risk of children taking another child's food
- on school camps where there are children with severe nut allergy, it should be requested that foods containing nuts are not taken or supplied consistent with the nut minimization policy in the school canteen
- the parents and school must work together prior to any special event to minimise risks of a reaction and to make sure emergency procedure is understood in case of an accidental exposure despite forward planning
- bullying by provoking food allergic children with food to which they are allergic should be recognized as a risk factor and addressed by anti-bullying policies.
- parents must update the written medical information given to school yearly and more often if there are any changes - allergies must be documented on all medical forms

## INSECT STING ALLERGY

People with a history of severe allergic reactions to insect stings (bees, wasps, ants) should ensure that they;

- carry an EpiPen as it is never possible to guarantee avoidance of stinging insects
- avoid being stung (if possible) - avoidance measures are mostly based on common sense, rather than firm evidence but this does include measures outlined below
- be assessed by an allergy specialist for immunotherapy - in contrast to food allergy, desensitisation (immunotherapy) is available for bee and wasp venom allergy.

## BEE STING AVOIDANCE

The following measures may help to prevent bee stings;

- always wear footwear outdoors, particularly on lawns with clover and near pools
- avoid rapid movement or swatting of bees
- try not to panic if a bee is caught in hair or clothing - remove slowly and carefully
- preferably wear light coloured clothing
- avoid beehives, bee keeping areas, and exercise caution in parks and gardens
- consider insect sting allergies when planning preschool and school play areas
- minimise the number of flowering plants which attract bees and wasps
- use closed ventilation systems in vehicles rather than open windows
- have nests removed from near home, schools and child-care centres when there are affected children attending
- exempt children from collecting litter at school, as this may harbour insects
- cover rubbish areas for the same reason, as food scraps may attract flying insects
- keep lawns mowed so that clover does not attract bees to play areas.

## WASP STING AVOIDANCE

The following measures may help to prevent wasp stings;

- exercise caution when eating outdoors
- avoid rubbish bins or dumps
- do not drink out of opaque containers
- avoid areas where wasps have been seen
- wear adequate footwear outdoors
- remove nests removed from places where there are affected children

## ANT STING AVOIDANCE

Allergic reactions to jumper ant stings are mostly restricted the hills around Adelaide, the south east of Australia, parts of Tasmania, rural Victoria, southern New South Wales and the south west of Western Australia. Allergic reactions to other types of ants occur in other parts of Australia. The following measures may help to prevent jumper ant stings;

- avoidance is difficult in an endemic area unless the allergic person lives and works in a heavily built-up area and never goes anywhere near native bushland or parks
- some ants are able to sting through thick clothing but partial protection can be obtained by wearing heavy footwear, clothing and using gloves
- nest removal should be attempted around schools and homes (ask the advice of a pest exterminator or local council), however eradication is often difficult and often only a degree of “control” of jumper ant numbers can be achieved
- since desensitisation (immunotherapy) is not yet widely available, there maybe good arguments to consider moving to another area without jumper ants if previous reactions have been life-threatening.

## DRUG ALLERGY

There is a very large variety of adverse reactions (side-effects) to medications, which may be loosely labelled ‘allergy’. Only a small proportion of these are actually allergic, and of these, only a few are anaphylaxis. Therefore it is important to distinguish anaphylaxis from other adverse reactions. An EpiPen is not usually required for people with a history of drug anaphylaxis since avoidance can be relied upon in non-medical settings. The following measures may help to prevent allergic reactions to drugs:

- people with known drug allergies should notify their medical carers
- identification with a Medic-Alert (or similar) bracelet is highly advisable - in an emergency medical staff treating other conditions need to have accurate information about severe allergies.

## LATEX ALLERGY

Avoidance of latex products is the only means of preventing serious reactions in people with latex allergy. Latex is found in medical and dental settings, balloons, household and gardening gloves, many adhesives and condoms. In mild latex allergy the use of non-powdered latex gloves may reduce the frequency or severity of symptoms, but non-latex alternatives are preferable. Be prepared for accidental exposure by carrying antihistamine and oral steroid tablets and possibly an EpiPen. The following measures may help to prevent allergic reactions to latex;

- in latex allergy a Medic-Alert(or similar) bracelet should be worn and surgical procedures should only be carried out in latex-free operating theatres
- people with latex allergy should inform their doctor and dentist when asked about 'drug allergy'
- if procedures are necessary carrying your own supply of non-latex gloves can help
- latex free condoms should be purchased by people with latex allergy.

australasian society of clinical immunology and allergy inc.

## APPENDIX A - Guidelines for EpiPen® Prescription

### RECOMMENDED

- **History of anaphylaxis* (if patient is considered to be at continuing risk)**

### MAY BE RECOMMENDED

- **History of a generalised* allergic reaction with one or more of the following factors:**

- **Asthma -** concurrent or past history
- **Age** - Adolescents and young adults have a greater risk of fatal food anaphylaxis. The majority of recorded fatal reactions to foods (~90%) occur in children over the age of 5 years.
    - Adults have a greater risk of fatal stinging insect anaphylaxis than children.
- **Specific allergic triggers**
- Nut allergy (to peanuts or other nuts) - Most deaths from food anaphylaxis occur from nuts. Generalised allergic reactions can be triggered by exposure to trace or small amounts of nuts, which can be difficult to avoid. Subsequent allergic reactions to nuts may be unpredictable.
- Stinging insect allergy (Bees, wasps, Jumper ants) in adults
- **Co-morbid conditions -** Ischaemic heart disease
- **Limited access to emergency medical care -** In remote locations early administration of adrenaline may not be possible unless an EpiPen is available.

- **These factors should be considered when deciding whether an EpiPen is prescribed, as they are known risk factors for more severe or fatal reactions.**

### NOT NORMALLY RECOMMENDED

- **Asthma -** in patients with asthma without anaphylaxis or generalised allergic reactions
- **Elevated specific IgE only (positive RAST and/or skin test)** without a history of clinical reactions -
- Positive test results alone do not necessarily mean there is allergic disease. These patients may be referred to an allergy specialist for assessment of their risk of allergy and anaphylaxis. This may include further investigations such as challenge testing.
- **Family (rather than personal) history of anaphylaxis or allergy**
- Whilst the risk for allergic disease is inherited, anaphylaxis is not inherited.
- **Local reactions to insect stings in adults and children**

- **Generalised skin rash (only) to bee or wasp stings in children**
- Prospective follow-up studies of subsequent bee stings in children presenting with local reactions or generalised skin rash (only) show that these children are at a very low risk of experiencing anaphylaxis with subsequent stings.
- **Resolved food allergy**

## EPIPEN JR vs EPIPEN PRESCRIPTION**

- EpiPen Jr and EpiPen are not usually recommended for children less than 10kg
- EpiPen Jr recommended for children between 10 and 20kg
- EpiPen recommended for adults and children over 20kg (approximately 6 years of age)

**** These are based on expert opinion which is at variance with the approved product information**

**An EpiPen should only be prescribed within the context of a comprehensive ANAPHYLAXIS MANAGEMENT PLAN**

## ANAPHYLAXIS MANAGEMENT PLAN

An EpiPen should only be prescribed within the context of a comprehensive anaphylaxis management plan that includes the following;

### REFERRAL TO AN ALLERGY SPECIALIST

### IDENTIFICATION OF THE ANAPHYLACTIC TRIGGER(S)
This should include a comprehensive history, clinical examination, appropriate use and interpretation of allergy testing.

### EDUCATION ON THE AVOIDANCE OF TRIGGER(S)
This is particularly important with food anaphylaxis.

### PROVISION OF AN ANAPHYLAXIS ACTION PLAN
This should document the following;

Name of child/adult
Allergic triggers
Carer contact details
Symptoms and signs indicating when to use the EpiPen
Instructions on how to use the EpiPen.

**Anaphylaxis action plans for EpiPen use can also be located at www.allergy.org.au**

### APPROPRIATE FOLLOW-UP
Review by an allergy specialist should occur to;

- Ascertain if the correct trigger(s) have been identified
- Determine whether the allergy persists
- Provide re-education on EpiPen use
- Renew action plan
- Ensure the EpiPen has not expired.

## DEFINITIONS

### # 1 ANAPHYLAXIS

Anaphylaxis is a rapidly evolving generalised multi-system allergic reaction characterized by one or more symptoms or signs of respiratory and/or cardiovascular involvement and involvement of other systems such as the skin and/or the gastrointestinal tract. Symptoms/signs of respiratory/cardiovascular involvement are:

**Respiratory:** difficulty/noisy breathing, swelling of tongue, swelling/tightness in throat, difficulty talking and/or hoarse voice, wheeze or persistent cough

**Cardiovascular:** loss of consciousness, collapse, pale and floppy (in young children), hypotension

### # 2 GENERALISED ALLERGIC REACTION

A generalised allergic reaction is a characterized by one or more symptoms or signs of skin and/or gastrointestinal tract involvement without respiratory and/or cardiovascular involvement.

**Skin:** generalised pruritus, urticaria / angioedema, erythema

**Gastrointestinal:** abdominal pain, vomiting, loose stools.

NB: The definition of anaphylaxis varies between countries, clinicians, organizations, and clinical scenarios. The above definition has been developed by ASCIA (2004) and will be subject to ongoing review as research and consensus discussions continue.



**ASCIA is the peak professional body of clinical immunologists and allergy specialists in Australia and New Zealand.**

**Website: www.allergy.org.au Email: education @allergy .org.au**


## APPENDIX B - FURTHER INFORMATION

**Where is further information on allergies and anaphylaxis available?**
The Australasian Society of Clinical Immunology & Allergy (ASCIA) has a large number of patient articles on its website: http://www.allergy.org.au

The following articles are of particular relevance to anaphylaxis:
http://www.allergy.org.au/aer/infobulletins/anaphylaxis.htm
http://www.allergy.org.au/aer/infobulletins/adrenaline.htm
http://www.allergy.org.au/aer/infobulletins/food_allergy.htm
http://www.allergy.org.au/aer/infobulletins/peanut_allergy.htm
http://www.allergy.org.au/aer/infobulletins/bites.htm
http://www.allergy.org.au/aer/infobulletins/jumper_ant.htm
http://www.allergy.org.au/aer/infobulletins/allergy_testing.htm

An index of all articles can be found at:
http://www.allergy.org.au/aer/infobulletins/index.htm

Anaphylaxis Action plans can be downloaded from:
http://www.allergy.org.au/aer/infobulletins/index.htm#anaph

Guidelines for prevention of food anaphylactic reactions to foods in schools, preschools and childcare centres can be downloaded from:
http://www.allergy.org.au/pospapers/anaphylaxis.htm

**Are there any patient support groups for anaphylaxis?**
These are also listed on the The Australasian Society of Clinical Immunology & Allergy (ASCIA) website: http://www.allergy.org.au/aer/patientsupport/index.htm
A national support group is Anaphylaxis Australia Inc www.allergyfacts.org.au

**Is multicultural information available?**
For multicultural material visit government health department websites such as the NSW Health Multicultural Health website http://mhcs.health.nsw.gov.au
which includes a limited material on allergy.

Anaphylaxis Australia has limited information (AAI information flyer) in Arabic, Chinese, Croation, Filipino, Greek, Hindi, Italian, Maltese, Spanish and Turkish.