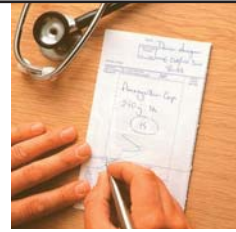




Managing childhood food allergies and anaphylaxis



Wendy Hu, MBBS, FRACGP, DipPaeds, MHA, is Adjunct Lecturer, School of Public Health and Community Medicine, University of New South Wales. wendy.hu@unsw.edu.au

Andrew Kemp, MBBS, FRACP, PhD, is Professor of Paediatric Allergy, Department of Allergy, Immunology and Infectious Diseases, The Children's Hospital at Westmead, Sydney, New South Wales.

BACKGROUND

Food allergies in children are becoming more common causing concern for parents, child carers, teachers and school principals.

OBJECTIVE

This article aims to provide practical information on childhood food allergies and their ongoing management including assessment, prescription of self or carer administered adrenaline, emergency action plans, patient education, school based strategies, and family support.

DISCUSSION

With most schools, preschools and child care centres having at least one child with food allergies, general practitioners are increasingly likely to be involved in school liaison and education, as well as caring for families with food allergic children.

Case history

Linda has brought her 4 year old daughter Jessica, who weighs 23 kg, for her preschool immunisations. She mentions that Jessica is allergic to peanut and milk, and has been attending a preschool where these foods have been banned. The family have an adrenaline auto-injector (EpiPen Junior™) for treating anaphylactic reactions, but have never used it. Linda is very worried about the risk of food allergic reactions when Jessica starts primary school next year and asks what can be done about it.

Most schools, preschools and childcare centres will have at least one food allergic child enrolled,¹ and dealing with the risk of reactions has become a significant concern for parents, child carers and teachers. The prevalence of food allergy in children varies with age and the definition used, but is thought to be increasing.² Sensitisation to foods, as demonstrated by positive skin prick and radioallergosorbent testing (RAST), may affect up to 6% of young children under 3 years of age, but a positive allergy test does not necessarily mean that the child will react when exposed to the food.² For example, in a community based study, approximately 1% of children up to 4 years

of age had a positive skin prick test to peanut, but less than half of these children reported reactions.³ The most common food allergens are milk, egg and peanut. Food allergies in young children can resolve, with about 80% of children growing out of their milk and egg allergy by 5 years of age, but only about 20% of children with peanut allergy will do so.⁴ Peanut is the most common cause of serious food reactions in school aged children.

As there is no readily available immunomodulatory treatment, management relies on preventing exposure to food allergens and prompt treatment of severe reactions. Most reactions will not be severe

enough to require adrenaline, and a minority (20%) occur at school or day care.⁵ Nevertheless, a recent Australian survey found that less than half the children who had experienced food anaphylaxis had a comprehensive emergency management plan at school or preschool.⁶ General practitioners may become involved in different ways; this article will focus on long term management rather than acute treatment, which has been dealt with earlier.⁷

Management

Assessment and referral

With food allergies it is essential to review the diagnosis to ensure that a correct diagnosis has been reached, as strict allergen avoidance has significant impact on the daily lives of both the child and their family. Children who have had clinical reactions in infancy may not experience another reaction by the time they reach school, either due to careful avoidance or resolution of the allergy. With impending school entry, reviewing the status of the allergy with skin prick testing and/or RAST blood tests, and confirmation of negative or equivocal results by food challenge, is often indi-

cated. Any food challenge should be supervised by an allergist in a monitored environment with full resuscitation facilities, as life threatening reactions may result. Allergist referral is also indicated when EpiPen™ has been provided or is being considered, where there has been a significant reaction to food, or when a comprehensive assessment of food allergies is required.

Who should be prescribed EpiPen?

In response to continued debate on this issue, the Australasian Society of Clinical Immunologist and Allergists (ASCIA) have released *Guidelines for EpiPen prescription* (Table 1). Self or carer administered adrenaline is recommended for children with a history of anaphylaxis (Table 2) who are judged to be at continuing risk. Where there have been generalised allergic reactions without cardiovascular or respiratory system involvement; risk factors for more severe reactions such as asthma, older age (>5 years, adolescents in particular), nut allergy, and limited access to emergency medical care should be taken into account. It is not usually recommended for children with posi-

tive skin prick or RAST without prior clinical reactions.

There are two formulations: ASCIA recommends EpiPen (0.3 mg adrenaline) for children over 20 kg, and EpiPen Junior™ (0.15 mg adrenaline) for children weighing 10–20 kg. However, other authorities recommend that EpiPen (0.3 mg adrenaline) only be given to children over 30 kg. In Jessica's case, it would be appropriate to advise Linda that the adult formulation should be given at the next prescription. Since November 2003, EpiPen and EpiPen Junior have had Pharmaceutical Benefits Scheme Authority listing. Authority scripts are to be provided by, or in consultation with, a clinical immunologist or allergist whose name must be provided. If there is a delay in accessing a specialist consultation, it is suggested that GPs contact their local allergist, allergy clinic or ASCIA for advice.⁸

General practitioners may also be asked to provide repeat scripts – this is an ideal time to check the family's understanding of allergy

Table 1. Resources

Australasian Society of Clinical Immunology and Allergy (ASCIA)

www.allergy.org.au/anaphylaxis/index.htm

- anaphylaxis action plans
- guidelines for prevention of food anaphylactic reactions in school, preschool and childcare centres
- guidelines for EpiPen prescription

New South Wales Department of Education and Training

www.health.nsw.gov.au/pubs/a/pdf/anaphylaxis.pdf

- anaphylaxis: guidelines for schools

Anaphylaxis Australia Incorporated (formerly known as FACTS)

www.allergyfacts.org.au

- consumer support organisation for food allergy and anaphylaxis

National Prescribing Service Radar

www.nps.org.au/npsradar/docs/RADAR_EpiPen.pdf

- adrenaline auto-injector for acute allergic anaphylaxis

Table 2. Definition of anaphylaxis

Anaphylaxis is a rapidly evolving generalised multisystem allergic reaction characterised 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

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

Source: ASCIA

management and ensure they have an updated emergency action plan. Action plans should include the child's name and photograph, allergic triggers, when and how to use an EpiPen, and emergency parent and medical contacts (Figure 1). Ideally such plans should be of uniform format to avoid confusion among carers and school staff. Annual review by an allergist is recommended for children with allergies severe enough to require adrenaline.

Parental and carer education in emergency management

Regardless of whether EpiPen is prescribed, parents and carers need to know how to recognise a reaction, and when they should seek urgent care and administer adrenaline. This can be a difficult judgment. Figure 1 lists symptoms and actions that parents and carers should be familiar with. Mild or moderate reactions may be treated with oral antihistamines but should be watched closely

for respiratory or cardiovascular features. If provided, check that the EpiPen is accessible at all times and not expired, and review the steps required to use it; as parents often understandably forget them. In emergency situations it is easy to place the thumb over the end with the needle, as the grey cap is removed at the other end (see Patient education page 39 this issue). Accidental thumb injection is distressing to all concerned.

School and preschool

Concern about the risk of food allergic reactions in schools has resulted in guidelines, eg. the ASCIA Guidelines for the prevention of food anaphylactic reactions in schools, preschools and childcare centres and the New South Wales Anaphylaxis guidelines for schools (Table 1). These guidelines outline the roles and responsibilities for parents, schools and medical practitioners.

In most cases, individual care plans will be agreed between the school or child care centre and parent(s). These usually include information about the child's allergy and steps to take in an emergency, as detailed in an action plan. Parents are responsible for providing current information from their doctor, medications, and written consent for administering medications. Other elements of the plan may include dissemination of information in an agreed manner (eg. action plan to be displayed in classrooms and canteen), training of staff in the recognition and management of acute reactions, and strategies to reduce allergen exposure. In New South Wales, nurse educators based at hospital allergy clinics can provide staff training on request.

Guidelines suggest that strategies for avoiding reactions and their use will depend on local circumstances. In general, children should not share food, lunchboxes or utensils. Preferably, children with severe food allergies should only eat food brought from home, but they should not be physically segregated from other children. Canteen staff should be informed about food allergies, the child's identity and the emergency plan. Class parties, excursions, and craft, cooking

Action plan for Anaphylaxis

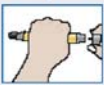
Name: _____
 Date of birth: _____

Photo


Known severe allergies: _____
 Parent/carer name(s) _____
 Work Ph: _____
 Home Ph: _____
 Mobile Ph: _____

Plan prepared by:
 Dr. _____
 Signed _____
 Date _____


How to give EpiPen® or EpiPen® Jr




1. Form fist around EpiPen® and pull off grey cap.



2. Place black end against outer mid-thigh.



3. Push down **HARD** until a click is heard or felt and hold in place for 10 seconds.




4. Remove EpiPen® and be careful not to touch the needle. Massage the injection site for 10 seconds.

MILD TO MODERATE ALLERGIC REACTION

- swelling of lips, face, eyes
- hives or welts
- abdominal pain, vomiting

ACTION

- stay with child and call for help
- give medications (if prescribed)
- locate EpiPen® or EpiPen® Jr
- contact parent/carer



watch for signs of Anaphylaxis

ANAPHYLAXIS (SEVERE ALLERGIC REACTION)

- difficulty/noisy breathing
- swelling of tongue
- swelling/tightness in throat
- difficulty talking and/or hoarse voice
- wheeze or persistent cough
- loss of consciousness and/or collapse
- pale and floppy (young children)

ACTION

- 1 Give EpiPen® or EpiPen® Jr
- 2 Call ambulance. Telephone 000
- 3 Contact parent/carer

If in doubt, give EpiPen® or EpiPen® Jr

Additional Instructions _____


© ASCIA 2003. This plan was developed by
 www.allergy.org.au

Figure 1. Action plan for anaphylaxis. Reproduced with permission: ASCIA

or science activities, may need to be modified so that allergenic foods are not used (eg. the allergic child may bring their own 'treat' to parties). Food bans may be appropriate in child care centres and preschools as younger children are more likely to 'share' food, but only on written specialist recommendation. In schools, banning foods is unrealistic and not recommended by either specialist allergy groups or consumer organisations. It may also stop older allergic children from learning to avoid accidental exposure. Environmental modification may reduce, but does not negate the risk of reactions.⁹ However, recent research shows that smelling peanuts or casual skin contact with peanuts is highly unlikely to cause a life threatening reaction,¹⁰ and ordinary cleaning is sufficient to remove all detectable traces of peanut allergen from hands and surfaces.¹¹

Supporting the family

The constant vigilance, reading of food labels, extra work from preparing food, restrictions on pre-prepared food, eating out and other social occasions, can be extremely stressful for families (see the article *Anaphylaxis – A patient perspective* by Ella Warmington page 72 this issue). It can be frustrating that many foods are labelled with 'may contain traces of nuts' and other disclaimers. Whether the child should eat such foods depends on their sensitivity and prior reactions. Specific advice should be sought from the child's allergist.

Parental anxieties are also heightened by new stages in the child's development (eg. starting school), inconsistent medical advice, and lack of support from other family members and the community.¹² Parents may worry that their child will be singled out and miss out on normal opportunities at school. Such concerns can be discussed when developing care plans with the child's teacher and school principal. Advice from consumer support organisations (*Table 1*) and dieticians familiar with food allergies can be invaluable. As the child matures, parents can be encouraged to educate children to take responsibility for self

management. Older children and adolescents often value support from peers and consumer organisations.¹³

Conclusion

General practitioners have a unique role in providing a family oriented approach to clinical assessment, referral, education and support (see *Patient education* page 39 this issue). With their local community links, GPs can facilitate liaison with schools, preschools and child care centres.

In our case scenario, Jessica's GP could review her allergy history, noting her changed requirement for EpiPen and organise allergist review, which may reveal resolution of the milk, but not the peanut allergy. In addressing Linda's concerns, the GP could provide Jessica's new school with updated medical information and assist with school staff education, thus providing much appreciated practical support.

Summary of important points

- Food allergies in children need regular review as both the child and the allergy can change, requiring management plans to be updated.
- Prescribing EpiPen should take into account the child's prior history and risk factors for serious reactions. Specialist consultation is required.
- All children who are prescribed EpiPen should have a current anaphylaxis action plan.
- Parental knowledge about recognising severe reactions and administering EpiPen should be regularly checked.
- Schools, preschools and child care centres have a role in developing individual care plans with parents, using information provided by the child's doctor.
- Families with food allergic children need ongoing support and appreciate practical advice from consumer support organisations and other reliable sources.

Conflict of interest: none.

Acknowledgment

The authors wish to thank Dr Kathy Currow for her helpful comments. Dr Hu has been supported by an NHMRC Public Health Postgraduate Scholarship and the Australian Allergy Foundation.

References

1. Rhim GS, McMorris MS. School readiness for children with food allergies. *Ann Allergy Immunol* 2001;86:172-6.
2. Sampson HA. Update on food allergy. *J Allergy Clin Immunol* 2004;113:805-9.
3. Tariq SM, Stevens M, Matthews S, Ridout S, Twiselton R, Hide DW. Cohort study of peanut and tree nut sensitisation by age of 4 years. *BMJ* 1996;313:514-7.
4. Skolnick HS, Conover-Walker MK, Koerner CB, Sampson HA, Burks W, Wood RA. The natural history of peanut allergy. *J Allergy Clin Immunol* 2001;107:367-74.
5. Sicherer SH, Furlong TJ, Munoz-Furlong A, Burks AW, Sampson HA. A voluntary registry for peanut and tree nut allergy. *J Allergy Clin Immunol* 2001;108:128-32.
6. Boros CA, Kay D, Gold MS. Parent reported allergy and anaphylaxis in 4173 South Australian children. *J Paediatr Child Health* 2000;36:36-40.
7. Hogan C. Anaphylaxis. *The GP Perspective. Aust Fam Physician* 2002;31:807-9.
8. National Prescribing Service RADAR. Adrenaline (EpiPen) auto-injector for acute allergic anaphylaxis. Available at: www.npsradar.org.au/articles/EpiPenTM.php.
9. Nowak-Wegryn A, Conover-Walker MK, Wood RA. Food allergic reactions in schools and preschools. *Arch Paediatr Adolesc Med* 2001;155:790-5.
10. Simonte SJ, Songhui MA, Mofidi S, Sicherer SH. Relevance of casual contact with peanut butter in children with peanut allergy. *J Allergy Clin Immunol* 2003;112:180-2.
11. Perry TT, Conover-Walker MK, Pomes A, Chapman MD, Wood RA. Distribution of peanut allergen in the environment. *J Allergy Clin Immunol* 2004;113:973-6.
12. Mandell D, Curtis R, Gold M, Hardie S. Families coping with a diagnosis of anaphylaxis in a child. A qualitative study of informational and support needs. *Allergy and Clinical Immunology International* 2002;14:96-101.
13. Percival J. The anaphylaxis campaign: youth workshop programme. *Nurs Times* 2003;99:44-5.

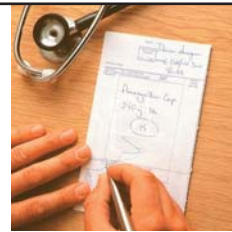
AFF

Correspondence

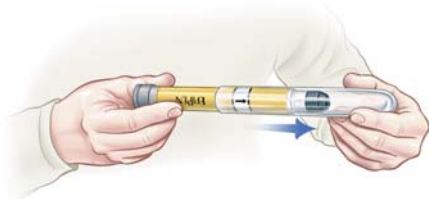
Email: afp@racgp.org.au

How to use an EpiPen™

A single use, preloaded adrenaline device



Australian Family Physician



2. Remove the grey cap from the end of the EpiPen



1. Remove the EpiPen from the plastic container

The liquid seen through the window should be clear, colourless and sediment free



3. Hold the EpiPen tightly in the palm of your hand
Place black tip gently against the outer thigh (at right angle to leg)
Push down **HARD** until you hear or feel a 'click'
Hold in place for 10 seconds



4. Remove the EpiPen from thigh
Be careful not to touch the needle
Massage the injection site for 10–20 seconds
Apply firm pressure with a clean cloth
Record time EpiPen was given
Call an ambulance