



The RCPCH care pathway for food allergy in children: an evidence and consensus based national approach

Adam T Fox,^{1,2} Kate Lloyd,³ Peter D Arkwright,⁴ Debi Bhattacharya,⁵ Trevor Brown,⁶ Philip Chetcuti,⁷ Mandy East,⁸ Jackie Gaventa,⁹ Rosie King,¹⁰ Ana Martinez,¹¹ Rosan Meyer,¹² Ami Parikh,¹³ Michael Perkin,² Neil Shah,¹⁴ David Tuthill,¹⁵ Joanne Walsh,¹⁶ Lisa Waddell,¹⁷ John Warner¹⁸; on behalf of the Science and Research Department, Royal College of Paediatrics and Child Health

For numbered affiliations see end of article

Correspondence to

Adam T Fox, Paediatric Allergy, St Thomas' Hospital, London SE1 7EH, UK; adam.fox@gstt.nhs.uk

Accepted 4 May 2011

ABSTRACT

Aims The Royal College of Paediatrics and Child Health (RCPCH) Science and Research Department was commissioned by the Department of Health to develop national care pathways for children with allergies; food allergy is the second pathway. The pathways focus on defining the competences required to improve the equity of care received by children with allergic conditions.

Method The food allergy pathway was developed by a multidisciplinary working group and was based on a comprehensive review of the evidence. The pathway was reviewed by a broad group of stakeholders including the public and approved by the Allergy Care Pathways Project Board and the RCPCH Clinical Standards Committee. The National Institute of Health and Clinical Excellence simultaneously established a short guideline review of community practice for children with food allergy; close communication was established between the two groups.

Results The results are presented in two sections: a pathway algorithm and the competences. The entry points are defined and the ideal pathway of care is described from initial recognition and confirmed diagnosis through to follow-up.

Conclusions The range of manifestations of food allergy/intolerance is much more diverse than hitherto recognised and diagnosis can be problematic as many patients do not have classical IgE mediated disease. The pathway provides a guide for training and development of services to facilitate improvements in delivery as close to the patient's home as possible. The authors recommend that this pathway is implemented locally by a multidisciplinary team with a focus on creating networks.

INTRODUCTION

Food allergy is one of the earliest manifestations of the allergic march.¹ Its presence is strongly correlated with other atopic disorders.² It can be life threatening^{3–4} and its presence erodes quality of life.⁵ For certain foods, allergy is likely to be long term, if not life long.⁶ Finally, the prevalence of food allergy appears to be increasing.⁷

Quantifying the problem of food allergy

Determining the prevalence of food allergy using the World Allergy Organization (WAO)⁸ definition is problematic as it requires demonstration

of both sensitisation (in the case of IgE mediated reactions) as well as clinical reactivity, the latter of which requires confirmation by a difficult and labour intensive gold standard test – the double blind placebo controlled food challenge (DBPCFC). Additional difficulties in determining true prevalence stem from the natural history of food allergies. As the majority of children with cow's milk and egg allergies outgrow these allergies during childhood,⁹ a cross-sectional study of children up to 18 years of age will not record food allergy for those who have grown out of it.

Questionnaire-based studies are very limited. It is well established that there is a significant discrepancy between self-reported food hypersensitivity (either allergy or intolerance) and that which can be confirmed by objective tests.^{10–13} A number of studies have attempted to quantify this discrepancy.^{10–13} Approximately 20% of a two-stage UK community studied perceived that they had adverse food reactions. However, when these subjects underwent blinded food challenges to eight common foods, only 1.4–1.8% were confirmed to have a true adverse food reaction.¹³ More than 38% of children and adolescents reported symptoms, but testing found only 4.2% were allergic.¹⁰ Another study found that parent reported infant food allergy (33.7%) could only be confirmed in 12.9% by testing and double blind placebo controlled challenges.¹¹

Which foods?

The WAO definition refers generically to food. The difficulty with establishing the true population prevalence is in determining to which foods challenges should be undertaken. One solution is to focus on the most common allergenic foods. This varies between countries and between ethnic and social groups within countries.¹⁴ Two different approaches are used. The first is to screen with a broad panel of foods to identify which most frequently induce reactions. The alternative is to assess the frequency of reactions to specific foods in the scientific literature.¹⁵

Using the broad panel approach, it has been found that six foods (egg, peanut, milk, soy, wheat and fish) accounted for 86% of positive challenges, although tree nuts and sesame were not part of the panel.¹⁶ New foods continue to be introduced,

Original article

for example, kiwi¹⁷ and lupin.¹⁸ The common food allergens approach found that food allergy to the eight most common allergens (peanut, tree nuts, egg, milk, wheat, soybeans, fish and crustacean shellfish) was self-reported as 2.7%.

Other reviews have found that food allergy affects more than 1–2% but less than 10% of the population (table 1).¹⁹

Risk factors

Certain risk factors for food allergy have been identified. More boys than girls are reported to have had reactions, but more women reported reactions than men ($p<0.05$).²⁰ Females also report significantly more food allergic reactions in questionnaire studies.²¹ Seasonality influenced food allergy, with 41% of children under 5 years of age with food allergy being born in the spring or summer compared with 59% in the autumn or winter ($p=0.002$).²² Study reports are variable, but food allergy is more common in childhood: 1.8% had a positive DBPCFC in a study of unselected adults¹³ compared with 6% of children in a study from the USA.²³ Family history is significant with self-reported peanut allergy occurring in 0.1% (3/2409) of grandparents, 0.6% (7/1213) of aunts and uncles, 1.6% (19/1218) of parents and 6.9% (42/610) of siblings of children with peanut allergy.²⁴ The challenge confirmed rate of peanut allergy in siblings of children with peanut allergy was 7% (3/39 children).²⁴

The presence of infantile eczema is a major risk factor for IgE mediated food allergy, with data showing that IgE mediated food allergy was six times more common in infants with eczema; 80% of Australian children with severe infantile eczema had a challenge proven IgE mediated food allergy.^{25–27} This association strengthened with both the severity of eczema as well as with earlier age of onset.²⁸ Genetic factors clearly play a role with the concordance rate of peanut allergy in identical twins being 64% but only 7% in fraternal twins.²⁹

Care pathways

To our knowledge this is the first such attempt to describe the care of children with food allergies using a national approach. The need and requirement for care pathways is described separately in this supplement.³⁰ For the purposes of the pathway, 'children' is an inclusive term that refers to infants, children and young people (0–18 years).

METHOD

The full methodology is outlined separately in this supplement.³⁰

RESULTS

The pathway results are presented in four parts: evidence review, mapping, external review and core knowledge documents.

Table 1 Pooled prevalence of food allergy: self-report and confirmed^{15 19}

Food	Self-report, % (95% CI)	Self-report range (%)	Confirmed by SPT, specific IgE, DBPCFC (%)
Cow's milk	3.5 (2.1 to 4.1)	1.2–17	0.6–0.9
Egg	1.3 (1.0 to 1.6)	0–2	0.3
Peanut	0.75 (0.6 to 0.9)	0–2	0.75
Fish	0.6 (0.5 to 0.7)	0–2	0.2–0.3
Shellfish	1.1 (1.0 to 1.2)	0–10	0.6
Any food		3–35	

DBPCFC, double blind placebo controlled food challenge; SPT, skin prick test.

Evidence review

A total of 638 titles and abstracts were screened by the project manager and Food Allergy Working Group (FAWG) chair (figure 1). Thirty-six systematic reviews and/or primary papers and 13 guidelines were identified for appraisal; handsearching the reference lists of appraised papers identified a further seven papers. The critical appraisal resulted in the inclusion of 14 systematic reviews and/or primary papers and five clinical practice guidelines.

The evidence review highlighted the value of an allergy focused clinical history.^{31–34} The use of skin prick testing^{31 35–39} and serum specific IgE testing^{31 34 37 39} was supported for the diagnosis of IgE mediated food allergy, so long as the results of the investigations were interpreted in the context of the clinical history.^{31 38} The research also showed that the specific IgE and skin test results should be used to optimise the timing of food challenges,^{35 38} but the predictive value of the level of specific IgE varies between different populations and should not be used in place of oral food challenges to determine allergy (eg, cow's milk allergy) where doubt remains.⁴⁰ When oral challenges for suspected IgE mediated allergies are conducted, they should be done in a safe and controlled environment with facilities for paediatric resuscitation.^{34 37 41} Atopy patch tests are available but their role in the diagnosis of food allergy remains unclear.³¹ There was no evidence to support the role of complimentary or alternative diagnostic tests such as IgG testing, Vega testing, kinesiology or whole live blood analysis in those with either IgE or non-IgE mediated allergy. Patient/family education was clearly supported^{41–50} alongside the use of a written personal management plan.^{42 47–49 51–54} Management plans should also be revised regularly and account for individual circumstances.⁵³ Ultimately the impact of food allergy on patients and their families' quality of life should be investigated.^{45 48 55 56} Individualised advice on appropriate dietary exclusion should be included^{39–41 57 58} in this plan, with expert dietetic input. The plan is particularly critical for children with the potential for anaphylaxis who may require emergency medication.^{41 49–52 59} Any review should include recognition of the resolution of food allergy (tolerance).⁴¹ A full evidence table can be obtained from the Royal College of Paediatrics and Child Health (RCPCH) Science and Research Department.

Mapping

The RCPCH care pathway for food allergy can be found at <http://www.rcpch.ac.uk/allergy/foodallergy>. This pathway was developed around the competences required to diagnose and optimally manage food allergy. It has been designed to complement the other RCPCH care pathways for children with allergies,³⁰ in particular the RCPCH care pathway for children with anaphylaxis.⁵⁹

For the purposes of this pathway, the FAWG defined food allergy as an immune mediated hypersensitivity reaction to food which may be divided into IgE mediated (immediate-onset) reactions and non-IgE mediated (delayed-onset) reactions.⁸

The group, however, did recognise that an important role for a service diagnosing and managing food allergy was in providing support for families in the relatively common situation where food allergy is shown not to be the cause of problems.

The required competences underpinning the various elements are described in the pathway document (<http://www.rcpch.ac.uk/allergy/foodallergy>). These competences have

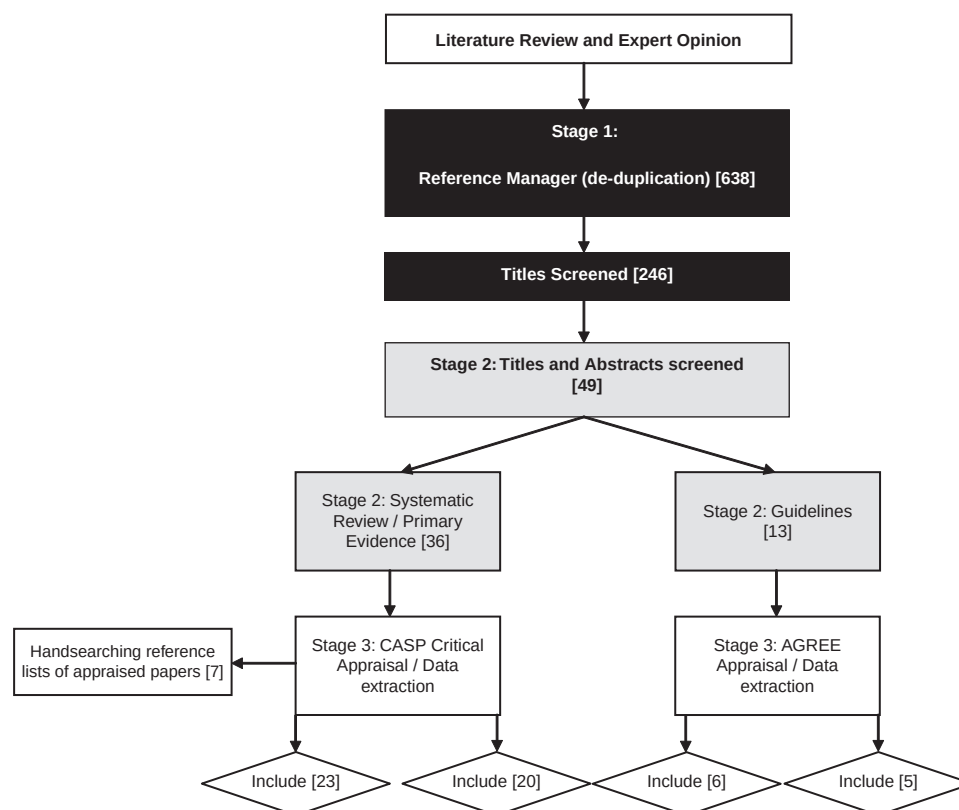


Figure 1 Food allergy pathway: methodology of evidence review.

not been assigned to specific health professionals or settings in order to encourage flexibility in service delivery. However, it is envisaged that the provision of optimal care at all levels will require close liaison between different health professional groups including doctors, nurses and dietitians. All specialists should have paediatric training in line with the principles outlined in the Children's National Service Framework.⁶⁰

While the pathway is linear, it is important to recognise that entry points can occur at any part of the pathway and that the pathway children follow may not be linear.

External review

Thirteen of 53 (25%) invited organisations responded, providing 119 comments. The comment period was over December and this may have resulted in a lower than expected response. All comments were reviewed by the FAWG and the pathway was approved by the Allergy Care Pathways Project Board and the RCPCH Clinical Standards Committee.

Core knowledge documents

The working group did not identify key guidelines (core knowledge documents) supporting the skills required to deliver this pathway. However, the forthcoming publication by the National Institute of Health and Clinical Excellence (NICE) is anticipated to be a core knowledge document.

DISCUSSION

The aims and purpose of the RCPCH care pathway project are described separately in this supplement.³⁰ It remains a concern that the quality of care for children with suspected food allergy in the UK is currently variable, and often poor.

A fundamental aim of the food allergy pathway is to improve the path that children follow when food allergy is suspected and to shorten the often long period before effective management is instituted. In infants food allergy and eczema often co-exist and this pathway seeks to reinforce the need for health professionals to consider allergic comorbidities. For acute presentations into this pathway, the RCPCH anaphylaxis care pathway should be consulted (<http://www.rcpch.ac.uk/allergy/anaphylaxis>).

The entry points into the pathway are by acute anaphylactic presentation, non-acute presentation and acute non-anaphylactic presentation. Recognition of these symptoms will be required in many community settings, particularly by health visitors and in primary care, as well as in hospital emergency departments and in secondary care clinics. The challenge for this pathway will be to determine a definitive diagnosis for food allergic children with appropriate dietetic support. This pathway should aid the development of consistent management of children with food allergy, avoiding unnecessary use of currently scarce tertiary care resources. Setting the competence required to deliver care will allow many children to be managed outside of the tertiary setting without compromising the quality of care.

Patient–health professional partnership

There is currently no cure for food allergy and it therefore largely a chronic condition that requires ongoing management through avoidance strategies. The success of this work is dependent on the education of patients to appropriately self-care. In order to achieve this, healthcare professionals must work together with children, young people and their families. Schools, colleges and early years settings are also important in supporting day-to-day adherence to the management plan,

Original article

or indeed, providing information on events that might drive review of the plan. Thus, liaison with educational facilities is a key item on the pathway for those with an acute food allergy. Concordance, or the agreement between the patient/family and health professional to follow a particular strategy, should be clearly established at the outset and the health professional should continue to assess adherence to the jointly agreed plan.

Clinical implications

None of the RCPCH pathways define where (or by whom) care should be provided, but rather describe the competences required by the relevant health professional(s) to deliver optimal care. To confirm a food allergy diagnosis, health-care professionals must be able to combine the findings of an allergy focused clinical history with the results of scientifically validated allergy tests, in the case of IgE mediated allergy, or the outcome of dietary exclusions and reintroductions, in the case of non-IgE mediated allergy. Much of standard management can occur close to the patient's home with onward referral only where the health professional no longer has the competence to deliver care. Complex management (eg, multiple food allergy or high risk of anaphylaxis) should only be delivered in a multi-disciplinary setting with access to a paediatric nurse with allergy training, a paediatric dietitian and psychosocial support; within the current provision of allergy services this would most likely be a tertiary setting.

This pathway has also been developed alongside the NICE guidance for diagnosis and assessment of food allergy in children and young people in primary care and community settings.⁶¹ These two documents complement each other and together offer clear guidance regarding initial assessment of suspected food allergy in primary care, the competences needed to safely deliver the care and appropriate referral.

The rise in allergic disease over the past decades has been the subject of significant media attention and the possible role of food as a cause of numerous childhood problems is reflected in the findings of studies looking at the prevalence of food allergies. Venter *et al*¹¹ found that over 33% of parents believed their child had reacted to a food by the age of 3. While the study was able to show that in most cases such reactions were not reproducible, it does illustrate that there is a burden of anxiety among parents whose children do not in fact have food allergies. Their fears can only be allayed effectively in community based care if there are the competences to not only diagnose food allergy effectively but also to use an allergy focused clinical history and if necessary, diagnostic tests or exclusion diets, to rule it out.

CONCLUSION

The RCPCH food allergy care pathway describes the steps in ideal care for children presenting with acute (anaphylaxis and non-anaphylaxis) and non-acute food allergic symptoms. Used in conjunction with the other papers within the RCPCH allergy care pathway portfolio (in press),^{30 59 62–64} it represents an opportunity to improve the lives of children with allergies in our community.

Author Affiliations

¹Paediatric Allergy, St Thomas' Hospital, London, UK

²Division of Asthma, Allergy and Lung Biology, Guy's and St Thomas' NHS Foundation Trust, London, UK

³Science and Research Department, Royal College of Paediatrics and Child Health, London, UK

⁴Paediatric Allergy, University of Manchester, Royal Manchester Children's Hospital, Manchester, UK

⁵Pharmacy, NHS Norfolk, Norwich, UK

⁶Paediatric Allergy, The Ulster Hospital, Dundonald, Belfast, UK

⁷Paediatrics, Leeds Children's Hospital, General Infirmary at Leeds, Leeds, UK

⁸Anaphylaxis Campaign, Farnborough, UK

⁹GOSH in Haringey, London, UK

¹⁰Department of Allergy, Southampton University Hospital NHS Trust, Southampton, UK

¹¹Dermatology, Great Ormond Street Hospital, London, UK

¹²Dietetics, Imperial College NHS Healthcare Trust, London, UK

¹³Paediatric A&E, Royal London Hospital, London, UK

¹⁴Paediatric Gastroenterology, Great Ormond Street Hospital, London, UK

¹⁵Department of Paediatrics, Children's Hospital for Wales, University Hospital of Wales, Cardiff, UK

¹⁶Primary Care, Roundwell Medical Centre, Norwich, UK

¹⁷Nottingham Community Nutrition and Dietetic Service, CitiHealth, NHS Nottingham City, Nottingham, UK

¹⁸Department of Paediatrics, Imperial College, London, UK

Acknowledgements We thank Ms Hilary Whitworth, a PhD Student at the University of Southampton, who provided assistance for the evidence review, Dr Michael Perkin for contributing to the writing of the introduction of this paper, the RCPCH Allergy Care Pathways Project Board who provided guidance and assistance and the RCPCH Clinical Standards team for their hard work on the approval process, in particular Ms Katie Jones.

Funding This project was funded by the Department of Health.

Competing interests TB: MSD-UK, GSK, ALK-Abello, MEAD Johnson, Danone (Nutricia), Astra-Zeneca, Allergy NI, Schering Plough; ME: Anaphylaxis Campaign; AF: SHS International (from 2007), Danone, Mead Johnson, Lactofree, MSD, Schering-Plough, Meda, GSK, Phadia, Dorling Kindersley, ALK-Abello, Anaphylaxis Campaign, Allergy UK, Nestle, Allergy Therapeutics, Leaveitout.com, MyFoodFacts; JG: Allergy UK, Nestle Nutrition Institute UK; NS: Nutricia; DT: Nutricia, SMA; JW: Novartis, Danone, Mead Johnson, Airsonette, Merck, Allergy Therapeutics, GSK, AstraZeneca.

Provenance and peer review Not commissioned; not externally peer reviewed.

REFERENCES

1. Wahn U. What drives the allergic march? *Allergy* 2000;**55**:591–9.
2. Schäfer T, Böhler E, Ruhdorfer S, *et al*. Epidemiology of food allergy/food intolerance in adults: associations with other manifestations of atopy. *Allergy* 2001;**56**:1172–9.
3. Pumphrey RS. Fatal Anaphylaxis in the UK, 1992–2001. Novartis Found Symp 2004;**257**:116–28; discussion 28–32, 57–60, 276–85.
4. Pumphrey RS, Gowland MH. Further fatal allergic reactions to food in the United Kingdom, 1999–2006. *J Allergy Clin Immunol* 2007;**119**:1018–19.
5. Flokstra-de Blok BM, Dubois AE, Vlieg-Boerstra BJ, *et al*. Health-related quality of life of food allergic patients: comparison with the general population and other diseases. *Allergy* 2010;**65**:238–44.
6. Fleischer DM. The natural history of peanut and tree nut allergy. *Curr Allergy Asthma Rep* 2007;**7**:175–81.
7. Gupta R, Sheikh A, Strachan DP, *et al*. Time trends in allergic disorders in the UK. *Thorax* 2007;**62**:91–6.
8. Johansson SG, Bieber T, Dahl R, *et al*. Revised nomenclature for allergy for global use: Report of the Nomenclature Review Committee of the World Allergy Organization, October 2003. *J Allergy Clin Immunol* 2004;**113**:832–6.
9. Sampson HA, Scanlon SM. Natural history of food hypersensitivity in children with atopic dermatitis. *J Pediatr* 1989;**115**:23–7.
10. Roehr CC, Edenharter G, Reimann S, *et al*. Food allergy and non-allergic food hypersensitivity in children and adolescents. *Clin Exp Allergy* 2004;**34**:1534–41.
11. Venter C, Pereira B, Voigt K, *et al*. Prevalence and cumulative incidence of food hypersensitivity in the first 3 years of life. *Allergy* 2008;**63**:354–9.
12. Woods RK, Stoney RM, Raven J, *et al*. Reported adverse food reactions overestimate true food allergy in the community. *Eur J Clin Nutr* 2002;**56**:31–6.
13. Young E, Stoneham MD, Petrukevitch A, *et al*. A population study of food intolerance. *Lancet* 1994;**343**:1127–30.
14. Keil T, McBride D, Grimshaw K, *et al*. The multinational birth cohort of EuroPrevall: background, aims and methods. *Allergy* 2010;**65**:482–90.
15. Rona RJ, Keil T, Summers C, *et al*. The prevalence of food allergy: a meta-analysis. *J Allergy Clin Immunol* 2007;**120**:638–46.
16. Sampson HA, McCaskill CC. Food hypersensitivity and atopic dermatitis: evaluation of 113 patients. *J Pediatr* 1985;**107**:669–75.
17. Lucas JS, Grimshaw KE, Collins K, *et al*. Kiwi fruit is a significant allergen and is associated with differing patterns of reactivity in children and adults. *Clin Exp Allergy* 2004;**34**:1115–21.
18. Shaw J, Roberts G, Grimshaw K, *et al*. Lupin allergy in peanut-allergic children and teenagers. *Allergy* 2008;**63**:370–3.

19. **Chafen JJ**, Newberry SJ, Riedl MA, *et al*. Diagnosing and managing common food allergies: a systematic review. *JAMA* 2010;**303**:1848–56.
20. **Uguz A**, Lack G, Pumphrey R, *et al*. Allergic reactions in the community: a questionnaire survey of members of the anaphylaxis campaign. *Clin Exp Allergy* 2005;**35**:746–50.
21. **Chen W**, Mempel M, Schober W, *et al*. Gender difference, sex hormones, and immediate type hypersensitivity reactions. *Allergy* 2008;**63**:1418–27.
22. **Vassallo MF**, Banerji A, Rudders SA, *et al*. Season of birth and food allergy in children. *Ann Allergy Asthma Immunol* 2010;**104**:307–13.
23. **Bock SA**. Prospective appraisal of complaints of adverse reactions to foods in children during the first 3 years of life. *Pediatrics* 1987;**79**:683–8.
24. **Hourihane JO**, Dean TP, Warner JO. Peanut allergy in relation to heredity, maternal diet, and other atopic diseases: results of a questionnaire survey, skin prick testing, and food challenges. *BMJ* 1996;**313**:518–21.
25. **Hill DJ**, Heine RG, Hosking CS, *et al*. IgE food sensitization in infants with eczema attending a dermatology department. *J Pediatr* 2007;**151**:359–63.
26. **Hill DJ**, Hosking CS. Food allergy and atopic dermatitis in infancy: an epidemiologic study. *Pediatr Allergy Immunol* 2004;**15**:421–7.
27. **Hill DJ**, Sporik R, Thorburn J, *et al*. The association of atopic dermatitis in infancy with immunoglobulin E food sensitization. *J Pediatr* 2000;**137**:475–9.
28. **Hill DJ**, Hosking CS, de Benedictis FM, *et al*. Confirmation of the association between high levels of immunoglobulin E food sensitization and eczema in infancy: an international study. *Clin Exp Allergy* 2008;**38**:161–8.
29. **Sicherer SH**, Furlong TJ, Maes HH, *et al*. Genetics of peanut allergy: a twin study. *J Allergy Clin Immunol* 2000;**106**:53–6.
30. **Warner JO**, Lloyd K. Shared learning for chronic conditions: a methodology for developing the Royal College of Paediatrics and Child Health (RCPCH) care pathways for children with allergies. *Arch Dis Child* 2011;**96**(Suppl 2):i1–i6.
31. **Bernstein IL**, Li JT, Bernstein DI, *et al*. Allergy diagnostic testing: an updated practice parameter. *Ann Allergy Asthma Immunol* 2008;**100**:S1–148.
32. **Sampson HA**, An JA. Summary and recommendations: Classification of gastrointestinal manifestations due to immunologic reactions to foods in infants and young children. *J Pediatr Gastroenterol Nutr* 2000;**30**(Suppl):S87–94.
33. **Du Toit G**. Food-dependent exercise-induced anaphylaxis in childhood. *Pediatr Allergy Immunol* 2007;**18**:455–63.
34. **Nowak-Węgrzyn A**, Assa'ad AH, Bahna SL, *et al*. Work Group report: oral food challenge testing. *J Allergy Clin Immunol* 2009;**123**:S365–83.
35. **Fiocchi A**, Bouygue GR, Restani P, *et al*. Accuracy of skin prick tests in IgE-mediated adverse reactions to bovine proteins. *Ann Allergy Asthma Immunol* 2002;**89**:26–32.
36. **Liccardi G**, D'Amato G, Canonica GW, *et al*. Systemic reactions from skin testing: literature review. *J Investig Allergol Clin Immunol* 2006;**16**:75–8.
37. **Rancé F**, Deschildre A, Villard-Truc F, *et al*. Oral food challenge in children: an expert review. *Eur Ann Allergy Clin Immunol* 2009;**41**:35–49.
38. **Sporik R**, Hill DJ, Hosking CS. Specificity of allergen skin testing in predicting positive open food challenges to milk, egg and peanut in children. *Clin Exp Allergy* 2000;**30**:1540–6.
39. **Furuta GT**, Liacouras CA, Collins MH, *et al*. Eosinophilic esophagitis in children and adults: a systematic review and consensus recommendations for diagnosis and treatment. *Gastroenterology* 2007;**133**:1342–63.
40. **Miceli Sopo S**, Radzik D, Calvani M. The predictive value of specific immunoglobulin E levels for the first diagnosis of cow's milk allergy. A critical analysis of pediatric literature. *Pediatr Allergy Immunol* 2007;**18**:575–82.
41. American College of Allergy, Asthma, & Immunology. Food allergy: a practice parameter. *Ann Allergy Asthma Immunol* 2006;**96**:S1–68.
42. **Kapoor S**, Roberts G, Bynoe Y, *et al*. Influence of a multidisciplinary paediatric allergy clinic on parental knowledge and rate of subsequent allergic reactions. *Allergy* 2004;**59**:185–91.
43. **Pumphrey RS**. Lessons for management of anaphylaxis from a study of fatal reactions. *Clin Exp Allergy* 2000;**30**:1144–50.
44. **Hu W**, Grbic C, Kemp A. Parental food allergy information needs: a qualitative study. *Arch Dis Child* 2007;**92**:771–5.
45. **Klinnert MD**, Robinson JL. Addressing the psychological needs of families of food-allergic children. *Curr Allergy Asthma Rep* 2008;**8**:195–200.
46. NICE. Atopic Eczema in Children. National Institute for Health and Clinical Excellence, 2007.
47. **Clark AT**, Ewan PW. Good prognosis, clinical features, and circumstances of peanut and tree nut reactions in children treated by a specialist allergy center. *J Allergy Clin Immunol* 2008;**122**:286–9.
48. **Singh J**, Aszkenasy OM. Prescription of adrenaline auto-injectors for potential anaphylaxis—a population survey. *Public Health* 2003;**117**:256–9.
49. **Muraro A**, Roberts G, Clark A, *et al*. The management of anaphylaxis in childhood: position paper of the European academy of allergology and clinical immunology. *Allergy* 2007;**62**:857–71.
50. Resuscitation Council UK. The Emergency Treatment of Anaphylactic Reactions – Guidelines for Healthcare Providers. London: Resuscitation Council UK, 2008.
51. **Ewan PW**, Clark AT. Efficacy of a management plan based on severity assessment in longitudinal and case-controlled studies of 747 children with nut allergy: proposal for good practice. *Clin Exp Allergy* 2005;**35**:751–6.
52. **Sheikh A**, Shehata YA, Brown SG, *et al*. Adrenaline (epinephrine) for the treatment of anaphylaxis with and without shock. *Cochrane Database Syst Rev* 2008;**4**:CD006312.
53. **Kemp AS**, Hill DJ, Allen KJ, *et al*. Guidelines for the use of infant formulas to treat cows milk protein allergy: an Australian consensus panel opinion. *Med J Aust* 2008;**188**:109–12.
54. **Nurmatov U**, Worth A, Sheikh A. Anaphylaxis management plans for the acute and long-term management of anaphylaxis: a systematic review. *J Allergy Clin Immunol* 2008;**122**:353–61, 361.e1–3.
55. **Avery NJ**, King RM, Knight S, *et al*. Assessment of quality of life in children with peanut allergy. *Pediatr Allergy Immunol* 2003;**14**:378–82.
56. **King RM**, Knibb RC, Hourihane JO. Impact of peanut allergy on quality of life, stress and anxiety in the family. *Allergy* 2009;**64**:461–8.
57. **Bath-Hextall F**, Delamere FM, Williams HC. Dietary exclusions for established atopic eczema. *Cochrane Database Syst Rev* 2008;**1**:CD005203.
58. **Yan BM**, Shaffer EA. Primary eosinophilic disorders of the gastrointestinal tract. *Gut* 2009;**58**:721–32.
59. **Clark AT**, Lloyd K, Sheikh A, *et al*. The Royal College of Paediatrics and Child Health (RCPCH) care pathway for children at risk of anaphylaxis: an evidence and consensus based national approach to caring for children with life-threatening allergies. *Arch Dis Child* 2011;**96**(Suppl 2):i6–i9.
60. Department of Health. National Service Framework for Children, Young People and Maternity Services, 2004. http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4089100.
61. National Institute for Health and Clinical Excellence (2011). Diagnosis and assessment of food allergy in children and young people in primary care and community settings. London: National Institute for Health and Clinical Excellence. Available from: www.nice.org.uk/guidance/CG116.
62. **Vance G**, Lloyd K, Scadding G, *et al*. The 'unified airway': the Royal College of Paediatrics and Child Health care pathway for children with asthma and/or rhinitis. *Arch Dis Child* 2011;**96**(Suppl 2):i10–i14.
63. **Leech SC**, Lloyd K, Grattan C, *et al*. The RCPCH care pathway for children with Urticaria, Angio-oedema or Mastocytosis: an evidence and consensus based national approach. *Arch Dis Child* 2011;**96**(Suppl 2):i34–i37.
64. **Cox HE**, Williams HC, Lloyd K, *et al*. Emollients, education and quality of life: the RCPCH care pathway for children with eczema. *Arch Dis Child* 2011;**96**(Suppl 2):i19–i24.



The RCPCH care pathway for food allergy in children: an evidence and consensus based national approach

Adam T Fox, Kate Lloyd, Peter D Arkwright, et al.

Arch Dis Child 2011 96: i25-i29
doi: 10.1136/adc.2011.214502

Updated information and services can be found at:
http://adc.bmj.com/content/96/Suppl_2/i25.full.html

These include:

References

This article cites 58 articles, 10 of which can be accessed free at:
http://adc.bmj.com/content/96/Suppl_2/i25.full.html#ref-list-1

Article cited in:
http://adc.bmj.com/content/96/Suppl_2/i25.full.html#related-urls

Email alerting service

Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

Notes

To request permissions go to:
<http://group.bmj.com/group/rights-licensing/permissions>

To order reprints go to:
<http://journals.bmj.com/cgi/reprintform>

To subscribe to BMJ go to:
<http://group.bmj.com/subscribe/>