



Peanut Allergy: An Epidemiologic Analysis of a Large Database

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Objective To confirm new observations on peanut allergy and answer current concerns that families and health-care providers have about peanut allergy.

Study design Children who presented with a story of peanut allergy or peanut sensitization were asked to participate in a registry, which allowed an analysis focused on questions that a food allergy support group had about children with peanut allergy or sensitization.

Results A total of 1070 children were entered into the registry over 5 years. Two-thirds had a reaction to peanut. Children with peanut allergy were predominantly male (63%), white (78%), and with private health insurance (80%). Most reactions involved the skin (55%) and anaphylaxis occurred in 35%. The median age of a reaction was 1 year old. Atopic dermatitis was noted in 60% and asthma in 41%. Additional food allergy was noted in 58%. When second exposures occurred 28% had a more severe reaction. Skin test size did not differentiate the type of a reaction and children with anaphylaxis had slightly higher specific IgE levels. Severe reactions with inadvertent exposure in children who were peanut sensitized was rare (<1%).

Conclusions The strategies for peanut allergy prevention and treatment have evolved. The data obtained in this large registry can answer many questions that families and healthcare providers have during this transition. (*J Pediatr* 2018;192:223-8).

Families faced with the diagnosis of peanut allergy or peanut sensitization encounter many challenges and have numerous questions. They seek help and guidance from the pediatrician, the allergist, the internet, and from the literature. Their search often uncovers a spectrum of information that can be contrasting and confusing. Peanut allergy and peanut sensitization are increasing in prevalence¹⁻³; are often severe and potentially fatal⁴⁻⁶; are life-long⁷; will require training in proper food avoidance; will require access to injectable epinephrine; and will require training on proper treatment of an untoward event with peanut exposure.⁸ Further confusion for parents is the recent focus on primary prevention^{9,10} and secondary prevention via desensitization.¹¹

There is a need to understand the current peanut environment as families and caregivers navigate through these newer concepts. There are few recent publications regarding real-life questions that families and caretakers may have about peanut allergy.¹² Many population studies are telephone surveys, reporting the clinical course of a child with peanut allergy or peanut sensitization; they have involved limited numbers of children or many allergy practices.¹³

The purpose of this report is to use our large single-center peanut registry to answer specific questions often encountered by healthcare providers about peanut allergy and peanut sensitization.

Methods

The Riley Peanut Registry began on April 1, 2011, and continues to enroll patients. This report is the 5-year experience with the registry and includes children who were enrolled until March 31, 2016. All families who presented with a concern about peanut allergy were asked to participate in the registry. All recruitment was performed by the attending allergist either during new patient evaluations or during follow-up visits if their diagnosis preceded the registry start date. Less than 1% of eligible families refused participation. No family opted out of the registry after they had enrolled.

Our allergy service evaluates children at 3 facilities: the Riley Outpatient Center in Indianapolis, Indiana University North in Carmel, Indiana, and Riley Children's Specialists, in Bloomington, Indiana. The study is approved by the Indiana University School of Medicine Internal Review Board. We did not employ a standardized questionnaire.

Once consents were obtained, the attending allergist asked questions about the peanut experience: the type of reaction (if any); age at initial reaction; subsequent

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OFC Oral food challenges
SPT Skin prick testing
slgE Specific IgE

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reactions; presence of other food allergies, asthma, or atopic dermatitis; and a family history of food allergies (limited to siblings with peanut allergy/sensitization). Demographic data was taken from clinic registration forms and verified with each family including race (as indicated by the parent), sex, and type of healthcare insurance (private, public, or self-pay). Public insurance was used as a surrogate for poverty.

Diagnostic studies performed included skin prick tests, peanut specific IgE (sIgE), and total IgE. At return visits, families were asked about subsequent exposures and reactions. If additional diagnostic tests were performed, they were entered into the registry. This included the results of oral food challenge(s) performed in our facilities. The data was entered into the registry by the principal investigator and reviewed by the research coordinator. The third review of all data entry was again performed by the principal investigator.

Peanut allergy was defined based on a convincing history of a reaction within 2 hours after exposure to peanut (either by ingestion or by contact) and the presence of a positive allergy test.¹⁴ Peanut sensitization was defined as having a skin prick test >3 mm bigger than the negative control; or, for those children who were seen prior to adopting caliper measurements, a wheal of 3-4+ size and/or the presence of detectable sIgE to peanut, but no clinical history of a reaction. Anaphylaxis was defined according to World Allergy Organization/American Academy of Allergy, Asthma, and Immunology criteria.¹⁵ Reaction history data was collected by both parental report and review of the medical records. Other food allergies were listed by either parental report or through the demonstration of sIgE to other foods.

Skin prick testing (SPT) was performed with Greer (Lenoir, NC) extracts using the Greer Pick. The tests were placed on the child's back and read after 15 minutes. All measurements of wheal size were performed with a Fisher Scientific (Pittsburgh, PA) digital caliper measurement of the largest wheal diameter. Specific IgE to peanut and total IgE was performed by the ImmunoCap technique (ThermoFisher, Uppsala, Sweden). Oral food challenges (OFC) were performed at the Riley Outpatient Center and Indianapolis, Indiana University North. All peanut OFCs were open challenges, following established guidelines.¹⁶

Questions about peanut allergy were obtained from a Food Allergy Support Indianapolis (FASI) meeting. This local food allergy support group meets monthly. The ranked top 10 questions became the framework for this report: (1) Who are the children with peanut allergy/peanut sensitization? (2) How does peanut allergy present? (3) When does peanut allergy occur? (4) Do children with food allergy have other conditions? (5) How often are siblings also peanut allergic? (6) Have there been any deaths due to peanut allergy? (7) Will the next reaction be worse than the first reaction? (8) Do test results relate to severity? (9) Why are so many more children diagnosed with peanut allergy? (10) What are the clinical features of the children who are only sensitized to peanut?

Results include basic frequency distributions for descriptive purposes. χ^2 tests were used for categorical variables, with the Fisher exact test performed when cell counts were small.

Because of multiple comparisons within analyses, Bonferroni corrections used to control for type I error rate inflation, with a *P* value of .004 being considered significant. One-way ANOVA was used for wheal size and specific IgE comparisons. All analytic assumptions were verified to ensure the validity of model results. Statistical tests were performed with SPSS 24 (IBM Corp, Armonk, New York) and SAS v 9.4 (SAS Institute, Cary, North Carolina).

Results

Over a 5-year period, 1070 children were registered in the database; 713 (67%) with peanut allergy and 357 (33%) with peanut sensitization. The specific reactions to peanut are shown in **Table I** (available at www.jpeds.com). The skin was the organ system most frequently affected by peanut (*n* = 392) and accounted for 55% of the reactions. Cutaneous reactions were mixed and included generalized urticaria in 144 of 713 (20.2%); contact urticaria in 203 of 713 (28.5%); angioedema in 29 of 713 (4.1%); urticaria with angioedema in 4 of 713 (0.6%); atopic dermatitis in 8 of 713 (1.1%); and a nonspecific rash was experienced by 4 of 713 (0.6%). Anaphylaxis occurred in 34.9% (*n* = 248).

Table II compares demographic and other allergic features among children with peanut anaphylaxis, other peanut reactions, and peanut sensitization only. There was no difference between these 3 groups regarding sex, race, and type of healthcare insurance. However, there are significant differences in the occurrence of other allergic conditions. Children with peanut allergy have significantly less atopic dermatitis (*P* < .001), fewer siblings with peanut allergy (*P* = .02), fewer other food allergies (*P* < .001), and less chance of passing an OFC compared with those with peanut sensitization (*P* = .005). Children with peanut anaphylaxis were significantly more likely to have asthma (*P* < .001) and other food allergy (*P* = .04) than those with nonanaphylactic reactions to peanut.

There were 55 sibling pairs and 3 families with 3 children registered. Adjusting for this redundancy within the registry, 9.2% had a family history of a sibling with peanut allergy/peanut sensitization.

The mean age at the time of the first reaction was 2.06 years (SD = 2.04 years), however, the median age of the first reaction to peanut was 1.0 year, 87.6%, had their first peanut reaction <3 years of age; 35 children who reacted to peanut (4.9%) had a reaction under the age of 10 months. Common reactions in this young group included contact urticaria in 16 (45.7%), generalized urticaria in 9 (25.7%), and anaphylaxis in 6 (17.1%).

In the entire registry, 65% reported atopic dermatitis and 41% reported asthma. Having other food allergies/sensitizations was common in the registry, with 68.7% reporting additional food allergies. Egg allergy/sensitization was reported in 430 (40.2%), milk allergy/sensitization in 213 (19.9%), and milk and egg allergy/sensitization in 160 (15%). Significantly more children with peanut sensitization had milk and/or egg allergy/sensitization compared with those with peanut allergy (*P* < .001). In 335 children (31.3%), peanut was the only

Table II. Demographics and other allergic associations

Demographics	Anaphylaxis (n = 248)	Other reactions (*n = 465)	P†	No reactions (n = 357)	P‡
Sex (male)	164 (66.1%)	284 (61.0%)	.18	235 (65.8%)	.26
Race			.31		.28
White	198 (79.8%)	361 (77.6%)		263 (73.7%)	
African American	30 (12.1%)	51 (11.0%)		41 (11.5%)	
Asian	8 (3.2%)	10 (2.2%)		18 (5.0%)	
Hispanic	0 (0%)	2 (0.4%)		1 (0.3%)	
Biracial	12 (4.8%)	39 (8.4%)		33 (9.2%)	
Other*	0 (0%)	2 (0.4%)		1 (0.3%)	
Insurance			.61		.41
Private	205 (82.7%)	371 (79.8%)		283 (79.3%)	
Public	37 (14.9%)	83 (17.9%)		70 (19.6%)	
Self-pay	6 (2.4%)	11 (2.4%)		4 (1.1%)	
Other allergic conditions					
Atopic dermatitis	137 (55.2%)	292 (62.8%)	.05	267 (74.8%)	<.001
Asthma	128 (51.6%)	168 (36.1%)	<.001	143 (40.1%)	<.001
Sibling with peanut allergy	32 (12.9%)	54 (11.6%)	.85	68 (19.0%)	.02
Other food allergy	156 (62.9%)	255 (54.8%)	.04	324 (90.8%)	<.001
Milk	22 (8.9%)	46 (9.9%)	.36	145 (40.6%)	<.001
Egg	75 (30.2%)	120 (25.8%)	.17	235 (65.8%)	<.001
Milk and egg	16 (6.5%)	31 (6.7%)	.92	113 (31.7%)	<.001
OFC	16	59		51	
Passed	6 (37.5%)	35 (59.3%)	.05	41 (80.4%)	.005

*Other includes unknown, refused, Pacific Islander, and Native American.

† χ^2 comparisons between the anaphylaxis group and those children with other reactions to peanut.

‡ χ^2 comparisons with all 3 groups.

positive food allergy test; 301 children (90%) in this group reported a reaction to peanut. Of the group with peanut allergy at the time of entry into the registry, 301 (42.2%) had no other food allergy/sensitizations. Tree nut testing was performed in 430 (40.2%); 285 had peanut allergy and positive tests to tree nuts and 145 had peanut sensitization and positive tests to tree nuts. χ^2 tests for seven tree nuts (almond, Brazil nut, cashew, hazelnut, pecan, pistachio, and walnut) revealed no difference in tree nut sensitization (P values ranges from 0.21 to 0.92) between children with peanut allergy and peanut sensitization.

During return clinic visits, families were asked about interval exposures to peanut and outcomes of those exposures. Of the 525 children who returned for at least 1 additional visit, 112 (21.3%) reported a subsequent reaction. **Table III** compares initial presentation with subsequent anaphylaxis and nonanaphylactic reactions. One-third of subsequent reactions (38/112; 33.9%) involved anaphylaxis. Of the 38, 31 (81.6%) did not have a prior history of anaphylaxis. Reactions of greater severity than the initial presenting reaction oc-

curred in 31 children (27.7%). Subsequent reactions of greater severity were more common in the children who had a skin reaction (urticaria, contact urticaria, or angioedema) as the initial peanut reaction. Only 1 child who was only peanut sensitization experienced anaphylaxis with an exposure. There were 21 children with a history of anaphylaxis with peanut who had a subsequent exposure to peanut with only 7 (33.3%) experiencing anaphylaxis during the subsequent exposure.

The 5-year duration of the registry did not allow for any meaningful assessment of the natural history of peanut allergy. There were 525 children who had a second visit and 252, 89, 38, and 5 children had a third to fifth visit, respectively.

Clinical evaluations included SPTs and specific IgE to peanut shown in **Table IV**. Using a 1-way ANOVA wheal size did not differentiate peanut allergy vs peanut sensitization, or types of peanut reactions ($P = .3$). Specific IgE levels were significantly higher in children with anaphylaxis compared with those with urticaria ($P = .003$), contact urticaria ($P < .01$), and those with no reaction to peanut ($P < .01$). Specific IgE levels were performed on 889 (83.1%). The lowest mean sIgE was seen in those with angioedema (7.08 kU/L), and the highest mean value in children with anaphylaxis (18.2 kU/L). Children with peanut sensitization had a mean sIgE value of 8.51 kU/L. Specific IgE values were significantly higher in the children with anaphylaxis and gastrointestinal reactions compared with other presentations ($P < .05$).

There was no significant difference in specific IgE levels between children with anaphylaxis and angioedema ($P = .20$), gastrointestinal reactions ($P = 1.0$), respiratory tract reactions ($P = .8$), or oral reactions ($P = .9$).

Table V compares the children with and without atopic dermatitis (active or a history). Atopic dermatitis was noted in 696 of 1070 (65.1%) of children in the registry. There was a

Table III. Second exposures to peanut (n = 112)

Initial peanut reactions	Second exposure with anaphylaxis (n = 38)	Second exposure without anaphylaxis (n = 74)
Anaphylaxis	7	14
No prior peanut reaction	1	25
Contact urticaria	12	20
Urticaria	12	9
Angioedema	3	1
Urticaria and angioedema	0	2
Gastrointestinal reaction	2	1
Oral allergy syndrome	1	2
	38	74

Table IV. Peanut sensitization, peanut allergy, and allergy diagnostics

Types of reaction	Wheal size* (mm) (SD)	n	Peanut specific IgE† (SE)	n
No reaction	13.64 (10.5)	242	8.51 (1.1)	311
Anaphylaxis	15.30 (9.7)	171	18.2 (1.1)	218
Urticaria	12.88 (10.8)	99	8.32 (1.2)	108
Angioedema	13.57 (11.6)	23	7.08 (1.5)	24
Contact urticaria	13.56 (9.1)	156	7.24 (1.2)	169
Gastrointestinal reaction	17.00 (10.6)	23	19.95 (1.3)	35
Respiratory reaction	18.13 (16.4)	8	7.08 (2.0)	8
Oral reaction	16.29 (12.2)	14	10.97 (1.7)	16
Mean	14.11 (10.2)	736	10.23 (1.7)	889

For SPT, using 1-way ANOVA there was no significant difference in wheal diameter ($P = .28$) between any of the groups.

For peanut sIgE, using 1-way ANOVA there was a significant difference in sIgE levels between children with anaphylaxis and urticaria ($P = .003$), contact urticaria ($P < .001$), and no reaction ($P < .001$). There was no significant difference in specific IgE levels between children with anaphylaxis and angioedema ($P = .20$), gastrointestinal reactions ($p = 1.0$), respiratory tract reactions ($P = .81$), or oral reactions ($P = .96$).

There was no significant difference in sIgE to peanut comparing anaphylaxis and angioedema ($P = .2$), gastrointestinal reactions ($p = 1.0$), respiratory tract reactions ($P = .81$), or oral reactions ($P = .96$).

*Wheal size at first evaluation. Major diameter used.

†For this calculation values <0.35 were assigned 0 and values >100 were assigned 100 kU/L. Not all children had a specific IgE performed. Used geometric mean. Used first value obtained.

significant difference ($P < .05$) between the atopic dermatitis and nonatopic dermatitis groups in the report of having any reaction to peanut. In children with atopic dermatitis, there were fewer reports of peanut reactions (atopic dermatitis 429 of 696 61.6% vs 281 of 370 76%). In those who had atopic dermatitis, there were significantly ($P < .05$) fewer reports of anaphylaxis (137 of 696; 19.7%) compared with children without atopic dermatitis (111 of 370; 30%). Generalized urticaria was significantly more common ($P < .05$) in those with atopic dermatitis (111 of 696; 16%) vs those without atopic dermatitis (32 of 370; 9%). Gastrointestinal reactions were significantly more commonly reported ($P < .05$) in the children without

Table V. The impact of atopic dermatitis on peanut allergy/sensitization

	Atopic dermatitis (n = 696)	No atopic dermatitis (n = 370)
Presentation		
Anaphylaxis	137 (19.7%)	111 (30.0%)*
Contact urticaria	115 (16.5%)	88 (23.8%)
Urticaria	111 (15.9%)	32 (8.6%)*
Gastrointestinal reactions	21 (3.0%)	15 (4.0%)*
Angioedema	11 (1.6%)	18 (4.9%)
Oral symptoms	14 (2.0%)	8 (2.2%)
Respiratory symptoms	8 (1.2%)	3 (0.8%)
Atopic dermatitis	8 (1.2%)	0 (0%)
Urticaria and angioedema	2 (0.3%)	2 (0.5%)
Unknown	1 (0.1%)	1 (0.3%)
Rash	1 (0.1%)	3 (0.8%)
Total	429 (61.6%)	281 (75.9%)*
No reaction	267 (38.4%)	89 (24.1%)*

Four unknown status regarding atopic dermatitis.

Pearson Chi-Square tests were performed to compare Atopic Dermatitis groups, with significant results* P values being given in the text.

*Indicates significant heterogeneity between the groups after Bonferroni adjustment to control for inflated type I error rates.

atopic dermatitis (15 of 370; 4%) in contrast to children with atopic dermatitis (21 of 696; 3%). There were no significant differences between the atopic dermatitis vs nonatopic dermatitis groups for contact urticaria, angioedema, oral symptoms, respiratory tract reactions, urticaria with angioedema, and nonspecified rash.

Discussion

A multi-center study of peanut-allergic patients (MIRABEL), one of the few allergy specialty-based population studies on peanut allergy, had 785 participants of all ages with known peanut allergy who were followed by 70 allergists in 3 European countries.¹² The purpose of our registry review was to see if our single academic practice experience could help answer common questions that families currently have about peanut allergy.

The findings of our large registry support many previously published findings including sex distribution, peanut allergy/peanut sensitization rates, clinical presentation, age of first reaction, co-existence of other allergic conditions, and occurrence of peanut allergy/peanut sensitization in siblings. Our findings that differ from other reports on peanut allergy/peanut sensitization include race, economic status, peanut allergy symptoms, other food allergies, reactions with second exposures, and sIgE levels linked to peanut allergy presentations.

The analysis of this registry supports previous observations in the literature that peanut allergy/peanut sensitization is more common in male children ($>60\%$).^{12,17} The proportion of peanut allergy (62.1%) and peanut sensitization (37.9%) children is also a consistent finding.¹⁴ Peanut allergy presenting as a skin reaction was reported in 55.1%. Previous reports on skin reactions vary from 52% to 89%.^{3,12,14,17,18} The median age of first peanut reactions at 1 year is consistent with previously published reports.^{14,18-20} Our finding of children reporting peanut allergy/peanut sensitization having a history of atopic dermatitis/eczema is consistent with what others have reported (50%-70.8%).^{12,14,21-23} The occurrence of peanut allergy/peanut sensitization in siblings was 9.2%, a finding also consistent with prior reports from large registries 6.9%²³ and 8.7%.²⁴

The results of diagnostic testing also support the well-reported observation that the SPT wheal measurement values do not relate to the severity of a reaction to peanut.^{8,25-29} In this registry, 38.4% of the children had atopic dermatitis and no history of a reaction to peanut. This is also consistent with previous reports that suggest that food allergy testing in children with atopic dermatitis will result in positive tests for foods.³⁰⁻³³

There are a few observations that differ from previous reports—for example, we report that peanut allergy/peanut sensitization was significantly more common in Caucasians (76.8%) and in children who had private healthcare insurance (80.3%). This is in contrast to the findings of Dyer where 47.7% with peanut allergy/peanut sensitization were Caucasian and 41.7% were considered to be poor.¹⁸ Within this single-center peanut registry, the prevalence of anaphylaxis (34.9%)

is less than the US population survey study (50%)³ and slightly higher than what was reported from clinic experiences (24%-30%).^{12,14,19}

In contrast to other reports, we had very few children who had gastrointestinal reactions (5.3%), oral symptoms (3.1%), respiratory reactions (1.5%), or isolated flares of atopic dermatitis (1.1%). Atopic dermatitis flares with peanut exposure had a similar prevalence rate as 1 study from an allergy private practice (1.7%)¹⁴ and a population survey reported peanut induced atopic dermatitis flares to be more common (32.3%).¹⁸

During the last 2 years of the registry, studies suggested that peanut allergy could be prevented with the early introduction of peanut to 4- to 11-month-old infants.³⁴ In our registry there were 35 children who were <9 months of age with peanut allergy and 6 (17.1%) who experienced anaphylaxis.

The comorbid condition of asthma was found to be lower (41%) than what has been previously reported (49%-59%).^{12,21,22} Having other food allergies with peanut allergy is commonly reported and ranges from 52.9% to 62%.^{14,21,22,35} Overall, our report of other food allergies was slightly higher (68.7%).

Our report of subsequent exposures and reactions to peanut (112 of 525, 23.3%) is significantly less than described by Sicherer et al²⁰ where 48% of the registrants had a second reaction but higher than the report of Nguyen-Luu et al²² (12.5%).²² In our registry, a more serious reaction, anaphylaxis, occurred with second exposures in 38 of 112 (33.9%) children with known peanut allergy and were seen in children who had an initial skin reaction to peanut. In 21 children with known anaphylaxis, the second peanut exposure resulted in anaphylaxis in only 7 (33.3%). In contrast to previous reports, children who had second exposures and reactions did not react in a stereotypical way.^{14,25}

The strengths of this report are that it is large, contemporary, limited to a single academic center, and pediatric focused. In addition, the diagnostics and approach to peanut allergy/peanut sensitization follow established clinical guidelines. However, recall of reaction severity may be inaccurate because the clinical presentation was taken from parental reports and outside physicians' medical records.

Sharing the results of a large registry from a single academic pediatric allergy practice can help to answer many questions that families have about peanut allergy, especially in an environment in which we have protocols for treatment and primary prevention for peanut allergy (**Table VI**; available at www.jpeds.com).

About one-third of children with a peanut concern who enrolled in our peanut registry are sensitized having no experience with peanuts. Atopic dermatitis is a very common finding and the comorbid condition of asthma was lower than in past reports. Siblings are at risk of having peanut allergy/peanut sensitization. In this 5-year registry, there were no deaths because of peanut allergy. More severe reactions with subsequent exposures were not common and children who had a history of anaphylaxis did not frequently report this reaction with a second exposure. Severity of peanut allergy is not related to any diagnostic test result and testing in children with atopic dermatitis

will frequently result in a positive test for peanut. Lastly, the peanut sensitization group had a higher prevalence of atopic dermatitis and tended to not experience a severe reaction with peanut exposure. Registries can help answer specific questions about food allergy and can help guide healthcare providers and families. ■

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Table I. Distribution of peanut reactions (n = 711*)

Types of reaction	Number	Percent (%)
Cutaneous	392	55.1
Anaphylaxis	248	34.9
Gastrointestinal	38	5.3
Oral	22	3.1
Respiratory	11	1.5

Cutaneous reactions include generalized urticaria, contact urticaria, and atopic dermatitis. Gastrointestinal, oral, and respiratory tract reactions were single organ system responses only.

*For 1 child, the specific type of clinical reaction was not known, and there was one noncategorized reaction.

Table VI. Ten common questions about peanut allergy/peanut sensitization and the answers

1. Who are the children with peanut allergy /peanut sensitization?	Peanut allergy /peanut sensitization children are mostly Caucasian who have private healthcare coverage.
2. How does peanut allergy present?	One-third of children with peanut allergy have had a life-threatening reaction. The other two-thirds have had a reaction defined as nonlife-threatening.
3. When does peanut allergy present?	The median age was 1 y and 87.6% of peanut allergy presented at age <3 y.
4. Do children with peanut allergy have other conditions?	The other allergic conditions that were frequently reported: atopic dermatitis (65%); asthma (41%); and having additional food allergies (68.7%). Allergy or sensitization to egg was reported in 40.2%, milk in 19.9%, and both egg and milk in 15%.
5. How often are siblings also peanut allergic?	There were 154 children who reported a sibling with peanut allergy/peanut sensitization for a frequency of 9.2%.
6. Have there been any deaths due to peanut allergy/	There have been no deaths in our patient population.
7. Will the next reaction be worse than the first reaction?	Second exposures are uncommon. Anaphylaxis did occur in 33.9% of those with a second exposure, and this was a new reaction in 31 of 38 (81.5%). In children with previous anaphylaxis, only 7 of 21 (33.3%) experienced anaphylaxis with a subsequent exposure to peanut.
8. Do tests results relate to severity?	The size of the wheal is not related to the type/severity of a reaction and does not sort out those who react from those who are sensitized to peanut. Specific IgE values may be higher in children with anaphylaxis or gastrointestinal reactions.
9. Why are so many more children diagnosed with peanut allergy?	Part of the answer to this question could be due to more frequent food allergy testing specifically in children who have atopic dermatitis.
10. What are the clinical features of the children who are only sensitized to peanut?	The peanut sensitization group was more likely to have atopic dermatitis; a sibling with peanut allergy; other food allergies including milk and egg, and to have passed an oral food challenge.