

Knowledge gaps and barriers to early peanut introduction among allergists, pediatricians, and family physicians

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Clinical Implications

- There is wide variability among practitioners in the definition of an infant at high risk of peanut allergy.
- The minority of generalists and allergists recommend that infants with severe eczema and/or egg allergy have pre-emptive evaluation prior to peanut introduction.
- There is a willingness by generalists and allergists to recommend introduction of allergenic solids prior to 6 months of age.
- There is wide discrepancy in counselling on ongoing peanut exposure after introduction in infancy.

TO THE EDITOR:

The approach to peanut allergy (PA) prevention has dramatically changed with the Learning Early About Peanut (LEAP) study,¹ and the National Institute of Allergy and Infectious Diseases (NIAID) guideline² recommending infants at high risk of PA due to severe eczema (SE) or egg allergy (EA) be introduced to peanut between age 4 and 6 months after physician evaluation. This has resulted in concerns about knowledge translation and feasibility of implementation.^{3,4} This study aimed to identify whether practice patterns are consistent with the NIAID guideline.

A 17-question survey evaluating the approach to an infant at risk of PA was sent to the Canadian Pediatric Society, the Canadian Society of Allergy and Clinical Immunology, and a wide sample of Canadian family physicians (FPs). Frequencies, percentages, and 95% CIs were calculated for all questions. Logistic regression was performed to determine provider characteristics predictive of referral patterns for preemptive screening, early solid introduction and breast-feeding, and frequency of peanut ingestion. Statistical analyses were performed using Stata SE version 12. The University of Manitoba Research Ethics Board approved this study. Survey data were collected from July to December 2016.

The response rate was 40.8% for allergists (80 of 196) and 38.7% for pediatricians (170 of 439). There were 206 responses for FPs (response rate could not be calculated because they are not contacted through a central governing society) (Table I).

Although most FPs/pediatricians recommended that allergenic solids be introduced at age 6 months to less than 1 year, whereas most allergists recommended introduction at age 4 to less than 6 months for egg, milk, and peanut (Table II).

There was variation in defining infants at high risk for PA (Table III), with allergists most commonly responding SE (97.2%) and EA (93.0%). For FPs and pediatricians, the most

common responses were sibling with PA (89.8%), and parental PA (81.9%, 79.6%).

There was variability in recommendations for preemptive evaluation for infants with SE/EA before peanut introduction (Figure 1). Allergists were 9.45 (95% CI, 3.97-22.5) times more likely than pediatricians and FPs combined to recommend testing before peanut introduction for infants with SE. Only 17.4% of allergists, 7.89% of pediatricians, and 10.2% of FPs routinely recommended preemptive peanut evaluation in infants with EA.

Most FPs (77.1%; 95% CI, 70.0-83.3), pediatricians, (91.4%; 95% CI, 85.8-95.4), and allergists (89.1%; 95% CI, 78.8-95.5) did not believe there are harms to introduction of solid foods between age 4 and 6 months. Allergists were significantly less likely to believe that breast-feeding would be affected with earlier solid introduction (0.27 in multiple regression analysis; 95% CI, 0.08-0.93) than FPs/pediatricians combined.

When counseling on frequency of exposure to allergenic foods, most allergists recommended 3×/wk (42.2%; 95% CI, 29.9-55.2). The most common recommendation was “no advice” for pediatricians (43.4%; 95% CI, 35.4-51.7) and FPs (59.6%; 95% CI, 51.8-67.2). Allergists were 4.57 (95% CI, 2.49-8.36) times more likely than pediatricians/FPs combined to recommend feeding peanut greater than or equal to 3×/wk versus less than 3×/wk.

This is the first study to examine how practices differ from recommendations based on LEAP study findings, and raises concerns about NIAID guideline implementation.

Our study shows discrepancy in the recommendation for age of introduction of allergenic foods. Although guidelines recommend not delaying the introduction of allergenic solids beyond 6 months,⁵ or 4 to 6 months,⁶ FPs commonly recommended introduction of allergenic solids at age 1 year or more, whereas pediatricians and allergists were more aligned with current recommendations.

There was wide variability in the definition of an infant at high risk for PA. There is no North American consensus on the definition of a high-risk infant. The NIAID definition (SE/EA) was validated in a previous proof-of-concept study that found both EA and SE to be strong risk factors for peanut sensitization in 834 infants (odds ratio, 2.31; 95% CI, 1.39-3.86 and odds ratio, 2.47; 95% CI, 1.14-5.34, respectively).⁷ However, previous North American guidelines define an at-risk infant based on a first-degree relative with an allergic condition, in contrast to the recent NIAID definition.^{5,6} There is also no recommendation for preemptive testing for scenarios described as high risk by survey respondents (family history of atopy/PA), which could lead to “screening creep,” resulting in delayed introduction.³

As a result of the LEAP study, the NIAID guideline strongly recommends that infants with SE/EA have preemptive testing to peanut before introduction, which is inconsistent with our findings that a minority of allergists and generalists routinely recommend testing. Moreover, because most pediatricians/FPs did not believe that there should be routine testing to peanut before introduction in high-risk infants, further education to generalists, and ongoing examination of their adherence to the NIAID guideline, is required.

TABLE I. Characteristics of respondents

Characteristic	FPs (n = 206)		Pediatricians (n = 170)		Allergists (n = 80)	
	Frequency, n	% (95% CI)	Frequency, n	% (95% CI)	Frequency, n	% (95% CI)
Practice setting						
Community	125	62.2 (55.1-68.9)	92	55.4 (47.5-63.1)	33	41.8 (30.8-53.4)
Academic*	76	37.8 (31.1-44.9)	74	44.6 (36.9-52.5)	46	58.2 (46.6-69.2)
Location of practice						
Urban	135	67.2 (60.2-73.6)	128	79.0 (71.9-85.0)	73	93.6 (85.7-97.9)
Rural/remote	66	32.8 (26.4-39.8)	34	21.0 (15.0-28.1)	5	6.4 (2.1-14.3)
Length of time in practice (y)						
<10 y	92	49.2 (41.8-56.6)	55	34.4 (27.1-42.3)	34	46.6 (34.8-58.6)
≥10 y	95	50.8 (43.4-58.2)	105	65.6 (57.7-72.9)	39	53.4 (41.4-65.2)
Sex						
Male	57	30.5 (24.0-37.6)	59	36.9 (29.4-44.9)	32	43.8 (32.2-55.9)
Female	130	69.5 (62.4-76.0)	101	63.1 (55.1-70.6)	41	56.2 (44.1-68.7)
Frequency of seeing pediatric patients						
Very often/often (multiple times per day-multiple times per week)	142	75.9 (69.2-81.2)			64	87.7 (77.9-94.2)
Sometimes/seldom/rarely (few times per week-few times per year)	45	24.1 (18.1-30.8)			9	12.3 (5.80-22.1)

*Includes academic only, and academic/community.

TABLE II. Recommendations for age of introduction of allergenic solids

Allergenic solid	4 to <6 mo				6 mo to <1 y			>1 y	
	Family medicine	Pediatrics	Allergy	Family medicine	Pediatrics	Allergy	Family medicine	Pediatrics	Allergy
Milk	16.2	20.1	67.1	51.5	44.2	28.6	32.3	35.7	4.3
Egg	24.2	33.1	62.9	58.0	63.6	35.7	17.8	3.3	1.4
Peanut	23.5	28.6	58.6	48.9	64.3	38.6	27.6	7.1	2.8
Tree nut	18.0	25.7	40.0	50.0	61.2	52.9	32.0	13.1	7.1
Sesame	18.6	24.0	34.3	55.7	68.2	61.4	25.7	7.8	4.3
Fish	18.2	30.0	34.3	56.4	67.5	61.4	25.4	3.5	4.3

All values are % values.

TABLE III. What constitutes an infant at high risk for PA*

Risk factor	FPs		Pediatricians		Allergists	
	Frequency, n	% (95% CI)	Frequency, n	% (95% CI)	Frequency, n	% (95% CI)
First-degree relative with atopic disease/allergy	82	49.4 (41.6-57.3)	95	62.5 (54.3-70.2)	30	42.3 (30.6-54.6)
Any family history of atopic disease/allergy	26	15.7 (10.5-22.1)	24	15.8 (10.4-22.6)	4	5.6 (1.6-13.8)
Egg allergy	45	27.1 (20.5-34.5)	58	38.2 (30.4-46.4)	66	93.0 (84.3-97.7)
Severe eczema	87	52.4 (44.5-60.2)	104	68.4 (60.4-75.7)	69	97.2 (90.2-99.7)
Milk allergy	22	13.2 (8.50-19.4)	46	30.3 (23.1-38.2)	26	36.6 (25.5-48.9)
Sibling of peanut-allergic child	149	89.8 (84.1-93.9)	128	84.2 (77.4-89.6)	44	62.0 (49.7-73.2)
Parental peanut allergy	136	81.9 (75.2-87.5)	121	79.6 (72.3-85.7)	29	40.8 (29.3-53.2)
History of asthma	47	28.3 (21.6-35.8)	58	38.2 (30.4-46.4)	12	16.9 (9.0-27.7)
History of rhinitis	16	9.64 (5.61-15.2)	20	13.2 (8.23-19.6)	4	5.6 (1.6-13.8)
Other	9	5.42 (2.51-10.0)	4	2.63 (0.72-6.60)	5	7.0 (2.3-15.7)

*Multiple responses were allowed.

Our study suggests a willingness by generalists and allergists to recommend introduction of allergenic solids before age 6 months. Most respondents did not believe that breast-feeding rates would be affected with earlier solid introduction. Based on available evidence, earlier solid introduction does not appear

to affect breast-feeding duration and evidence regarding reduced infection risk with breast-feeding is controversial.⁸

Our study illustrates a discrepancy in counseling regarding ongoing peanut exposure. The NIAID guideline recommends that once introduced, peanut consumption should be 6 to 7 g

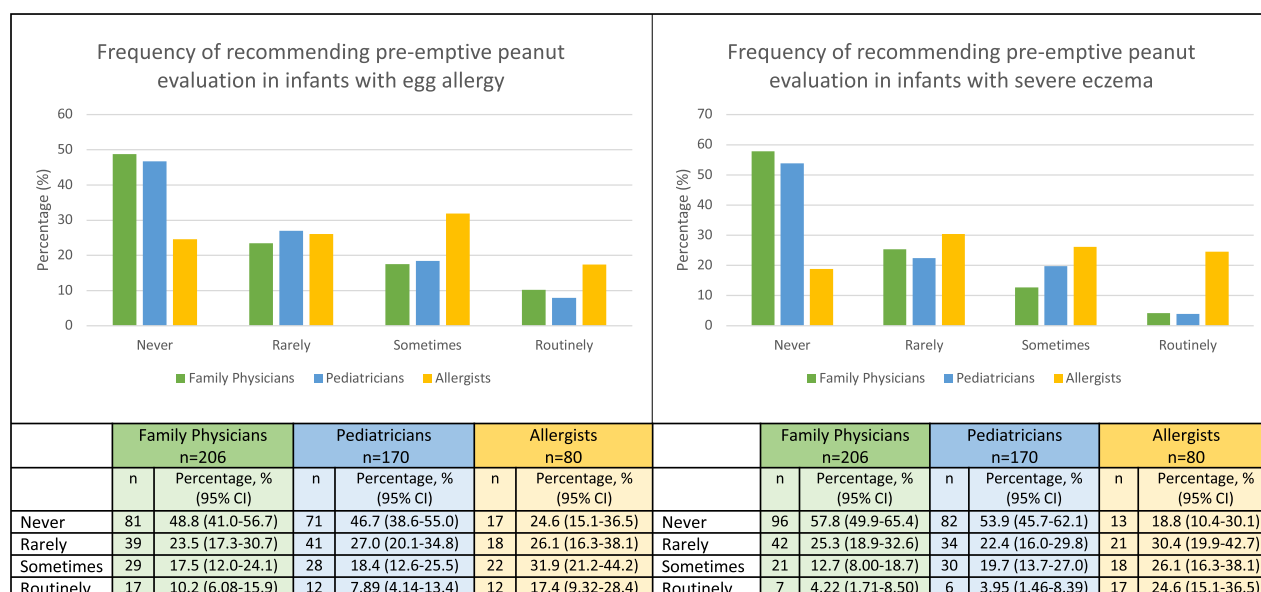


FIGURE 1. Frequency of recommending preemptive peanut evaluation before peanut introduction in high-risk infants.

over 3 or more feedings per week. Although the most common allergist recommendation was ongoing exposure 3×/wk (42.2%), most commonly pediatricians and FPs responded “no advice.” These discrepancies may be explained by the lack of recommendations on allergen exposure for any food besides peanut, or impracticality. Although ongoing exposure to potential allergens to maintain tolerance is recommended,⁵ our study suggests that generalists rarely provide this advice.

Limitations include the possibility that some allergists/pediatricians did not receive the survey, and it was not possible to distribute the survey to all FPs in Canada (the College of Family Physicians does not distribute surveys to all members). This survey reflects a sample of Canadian physicians and may not be representative of other jurisdictions. The survey was distributed when the NIAID guideline was released in draft form, although the LEAP study had already been published. Future studies could assess the longer term impact of the NIAID guidelines.

This survey suggests that ongoing national education is required to implement LEAP findings, with respect to both the definition of high risk as defined in the NIAID guideline and the importance of regular ingestion once tolerance is established. North American consensus among guidelines is needed on the definition of a high-risk infant. Health care system changes are required to ensure the recommendations regarding early food introduction and appropriate screening of at-risk infants is conducted.

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