



Caregiver and expecting caregiver support for early peanut introduction guidelines



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ABSTRACT

Background: Recent guidelines recommend early peanut introduction (EPI) beginning around 4 to 6 months of age in infants with severe eczema and/or egg allergy and around 6 months for all other infants. Caregiver preferences for such practices are unknown.

Objective: To determine levels of support for early allergenic solid food recommendations among new and expecting caregivers of infants at risk for peanut allergy.

Methods: We explored preferences for EPI and in-office allergy risk assessment (IRA) through a nationally representative survey of expecting (n = 1,000) and new caregivers of infants younger than 1 year (n = 1,000).

Results: Among a primarily female (99.7%), married (80.3%), and white (74.4%) sample, 29% had no or vague awareness of the new guidelines, 61% had no or minimal concern for their child developing food allergy, but 54% felt timing of food introduction has moderate to strong importance for developing food allergy. Only 31% expressed willingness for EPI before or around 6 months of age, with 40% reporting willingness to introduce peanut after 11 months of age, similar to tree nuts and seafood. However, 60% reported willingness to introduce egg before 8 months of age. A total of 51% and 56.8% were unwilling to allow IRA methods, such as skin testing and oral challenge, before 11 months of age, respectively. Odds of willingness to delay peanut introduction (odds ratio, 0.79; 95% confidence interval, 0.65–0.96) and undergo challenge (odds ratio, 0.67; 95% confidence interval, 0.54–0.82) after 6 months of age were lower among expecting caregivers.

Conclusion: Among new and expecting caregivers, there is poor current willingness and questionable support for early allergenic solid food recommendations, including IRA before introduction. Willingness was better among expecting vs current caregivers. These trends underscore a need for broader formal implementation planning to facilitate early allergen introduction and maximize its preventive benefits.

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Introduction

Peanut allergy affects an estimated 2% of children in the United States.¹ It is often lifelong and is associated with life-threatening anaphylaxis.^{2–4} The natural history of peanut allergy suggests that 20% to 25% of cases may resolve by 4 years of age.^{2,3} Although at least 2 potential treatments have completed a phase III clinical trial, such therapies may be costly, provide a limited spectrum of protection against unintentional exposure, and none have received approval by the US Food and Drug Administration (FDA) as of yet.³ A recent meta-analysis of oral immunotherapy studies notes that although therapy is associated with significant protective effects through clinical desensitization, it carries significant risk of adverse events during the process and limited evidence of any long-term sustained nonresponsive effect.⁵ Thus, there is no current long-lasting treatment for peanut allergy.

Recent data have shown that peanut allergy may be prevented through early, deliberate oral peanut exposure within the first year of life, followed by consistent feeding thereafter. A 2015 randomized clinical trial of early (4–11 months of age) peanut introduction vs delayed (after 5 years of age) introduction in high-risk children for peanut allergy development (those with egg allergy, severe eczema, or both) noted that consuming 2 g of peanut thrice weekly for 5 years was associated with a 17% absolute risk reduction in the incidence of challenge-proven peanut allergy (Learning Early About Peanut Allergy [LEAP] study).⁶ A related 2016 trial noted that in standard-risk, exclusively breastfed children randomized to receive peanut (in addition to multiple other allergenic solids) beginning around 3 months (in conjunction with continuing breastfeeding per established UK guidelines) vs after 6 months of age the introduction at 3 months was associated with a small but significant absolute risk reduction in the incidence of peanut allergy in the per-protocol analysis only but not the intention-to-treat analysis (Enquiring About Tolerance [EAT] study).⁷ Given these data, the National Institute of Allergy and Infectious Diseases (NIAID) recently convened an expert panel on author guidelines on the early introduction of peanut to high-risk children (those with severe eczema and/or egg allergy) starting as early as 4 to 6 months of age (after in-office assessment with allergy testing and supervised introduction with an allergist) and in all other children (mild to moderate or no eczema) around 6 months of age, without any in-office assessment. These guidelines were published in January 2017⁸ and are the first to actively recommend screening and observed introduction for any food.^{3,4} The FDA has approved a qualified health claim for peanut-containing infant products in support of the benefit from these recommendations.⁹

Guideline dissemination is a crucial step to provide health care professionals and caregivers the necessary background information, rationale, and recommendations regarding early peanut introduction (EPI). How to best achieve this now needs to be addressed because there is no clear implementation strategy in place. Moreover, there is poor understanding of what caregiver preferences may be toward early introduction of potentially allergenic solid foods. Messaging regarding when to introduce potentially allergenic solid foods into an infant's diet has been mixed since 2000, with an initial recommendation to avoid peanut and tree nuts until children were at least 3 years of age, followed by a reversal of this in 2008 to not delay introduction of any solid food (peanut included) beyond 4 to 6 months of age.^{10,11} Understandably, this has created confusion among both caregivers and pediatricians, and evidence suggests that there may be significant delay in introducing certain foods despite the 2008 recommendations.^{11,12} In an effort to better understand potential barriers for implementing the new peanut early introduction guidelines, we assessed new and expecting caregiver preferences regarding early peanut and other potentially allergenic solid food introduction, as well as preferences regarding methods to facilitate introducing these foods.

Methods

In conjunction with the professional survey research firm Propeller Insights, an online sample of 1,000 expecting caregivers and 1,000 caregivers of newborns 12 months or younger was fielded during a 3-week period in April 2017. This time was deliberately chosen as a preimplementation baseline given the recent publication of the NIAID guidelines on EPI just 3 months earlier (in the first week of January 2017 and 26 months after the publication of the LEAP study).⁸ Men and women aged 18 to 55 years who self-identified as a US resident and who currently had a child 12 months or younger or who were currently pregnant (in women) were targeted. Panel respondents who initially indicated interest in the topic were then excluded from further participation if this demographic profile was not met. Screen-in items within the survey served as a secondary confirmation for fit to the target population, but no additional inclusion and exclusion criteria were used.

The survey consisted of 32 questions that pertained to knowledge, attitudes, and preferences regarding timing of introduction of solid foods, concern and understanding for the potential development of food allergy, attitudes regarding office-based recommendations for the introduction of potentially allergenic solids, and procedural in-office assessment methods for potential allergic reactivity. Responses were stratified by pregnancy status for statistical analysis. The survey was weighted using an iterative proportional fitting technique to provide poststratification weights according to geographic region and ethnicity to achieve a nationally representative panel per recent US Census data, with a weighting efficiency of 95.8%. Skip logic was used where appropriate. Data were analyzed for descriptive frequencies and for inferential analysis by Fisher exact test, independent means *t* test, and logistic regression analysis (with testing for interaction effects of family history of food allergy) using Stata SE, version 13 (StataCorp, College Station, Texas). Prespecified outcomes included early introduction guideline awareness, concern for development of food allergy, belief regarding the importance of the timing of introduction in developing food allergy, willingness for specific timing of potentially allergenic solid introduction, family history of food allergy, and willingness of their child to undergo specific risk-reducing assessments in a specialist's office before initial food introduction as related to currently being pregnant or having recently delivered in the past year. A Bonferroni correction was applied for the multiple comparisons (with the level for significance adjusted to $P = .005$ for 10 comparisons). Because of the weighted design, the Stata survey mode was used. Electronic informed consent was obtained for participation. This study was approved by the Colorado Multiple Institutional Review Board.

Results

A total of 3,534 individuals were randomly approached to participate, with 1405 individuals excluded before taking the survey based on not fitting the final demographics sought for the sample. From among those meeting the demographic profile, a total of 2,196 respondents initiated the survey, with 2,000 respondents completing the survey (91% response rate, representing 56.6% of the total panel initially approached). The population was intentionally skewed with respect to respondent age (given the targeted 18- to 55-year-olds), sex (this was nearly an exclusively female sample), and marital status but was otherwise was nationally representative for racial/ethnicity and geographic trends. The sample demographic trends are listed in Table 1. Among all respondents, 53.1% reported a family history of food allergy (sibling, parent, or other primary relative). Among those currently expecting a child, 64.7% reported having another child in the house, 30.3% of whom were reported to have a diagnosis of food allergy. Among those who recently had a newborn

Table 1
Demographic Trends of the Survey Population^a

Variable	No. (%) of patients [95% CI] ^b
Age, mean (SE), y	30.1 (0.1) [29.8–30.3]
Female	1,994 (99.6) [99.2–99.8]
Race	
White	1400 (70) [68–72]
Black	240 (12) [10–14]
Asian	92 (4.6) [4–6]
Hispanic	220 (11) [10–13]
Native American	26 (1.3) [1–2]
Multirace	22 (1) [1–2]
Married	1,576 (79) [76.8–80]
Geographic area	
Rural	394 (19.7) [18–21]
Suburban	999 (49.9) [47.7–52.2]
Urban	599 (29.9) [27.9–32.1]
First or second trimester of pregnancy (n = 1,000)	724 (72.4) [66.6–78.5]
Infant age, mo (n = 1,000)	
<1	41 (4.1) [3–5.5]
1	42 (4.2) [3.1–5.7]
2	76 (7.6) [6.1–9.5]
3	114 (11.4) [9.5–13.6]
4	103 (10.2) [8.4–12.4]
5	66 (6.6) [5.1–8.3]
6	93 (9.3) [7.6–11.3]
7	68 (6.8) [5.3–8.5]
8	65 (6.5) [5.1–8.3]
9	52 (5.2) [4–6.8]
10	58 (5.7) [4.4–7.4]
11	49 (4.9) [3.7–6.5]
12	173 (17.3) [15–19.8]
Has introduced solid foods (n = 1,000)	696 (69.6) [66.6–72.4]
Breastfed ≥4 mo (n = 1,000)	615 (61.5) [54–70.1]
Pediatrician as primary care physician (n = 1,000)	886 (88.6) [86.5–90.4]
Comorbid atopy (n = 1,000)	
Mild to moderate eczema	253 (26.6) [24.2–29.3]
Severe eczema	42 (4.5) [3.4–6]
Asthma	57 (5.6) [4–8.2]
Food allergy	141 (14.1) [11.1–17.8]

^aData are presented as number (percentage) of patients unless otherwise indicated. N = 2,000 unless otherwise stated.

^bThe 95% confidence intervals (CIs) were calculated using reverse logit transformation to provide the 95% CI fit for the sampling weights and frame.

in the past year, 24.5% had another child in the house with a reported food allergy. There was no significant difference between the pregnant and recently delivered group in the proportion of respondents with a family history of food allergy.

Trends Regarding Baseline Concern for Food Allergy Development and the Role of Timing of Introduction

Among the overall population (n = 2,000), 29% reported no (“No, I have not heard of the guidelines”) or only limited awareness (“I have a vague idea of the guidelines; I think my doctor mentioned it”) of the new guidelines, and 42.6% reported strong familiarity with these recommendations as explained to them by their physician (“Yes, my doctor has educated me on the guidelines.”). There were no significant differences in the odds of reporting guideline awareness between the pregnant and recently delivered group. The amount of reported importance ascribed to adherence with such guidelines was split, with 53.7% reporting no or minimal importance and 40% reporting this was exceptionally important; however, there was no significant difference in the odds of this importance between the pregnant and recently delivered group. Overall, 61% of the total population had no or minimal concern for their child developing a food allergy (odds ratio [OR], 1.6; 95% confidence interval [CI], 1.2–2.02; $P < .001$), but those who were pregnant (OR, 2.5; 95% CI, 1.9–3.2; $P < .001$) had higher odds of escalating concern level for developing food allergy (minimally, moderately, extremely vs no concern) vs those who had recently delivered (OR, 2.8; 95% CI, 1.99–3.88; $P < .001$). Only 11.2% reported they were “extremely concerned” about their child developing food allergy. Moreover, although only 54% of the combined population felt that timing of introduction has moderate to strong importance for developing a food allergy, those who were pregnant had higher odds of escalating belief in the importance of this association (moderately important and extremely important, but not mildly important, compared with no importance) (OR, 1.32; 95% CI, 1.05–1.7; $P = .02$) vs those who recently delivered (OR, 1.4; 95% CI, 1.1–1.9; $P = .01$). However, any reported family history of food allergy was significantly associated with better reported awareness of the guidelines (OR, 1.2; 95% CI, 1.02–1.49; $P = .03$, nonsignificant after adjustment for multiple comparisons), concern for their child developing food allergy (OR, 2.5; 95% CI, 1.8–3.5; $P < .001$), and belief in the importance of the timing of introduction in developing food allergy (OR, 1.2; 95% CI, 1.03–1.46; $P = .02$, nonsignificant after adjustment for multiple comparisons).

Trends Regarding the Specific Willingness to Introduce Potentially Allergenic Foods in the First Year of Life

Table 2 details the reported preference for timing of introduction of major potentially allergenic solid foods. Only 31% of the

Table 2
Infant Age at Which Parent is Willing to Introduce Allergen

Age, mo	No. (%) of parents				
	Peanut	Egg	Milk	Seafood	Tree nut
Combined population (n = 2,000)					
<4	233 (11.7)	271 (13.5)	202 (18.7)	109 (5.4)	139 (6.9)
5–6	392 (19.6)	529 (26.5)	245 (12.3)	186 (9.3)	266 (13.3)
7–12	777 (38.9)	924 (46.2)	767 (38.3)	627 (31.4)	718 (35.9)
>12	598 (29.9)	276 (13.8)	614 (30.7)	1,078 (53.9)	877 (43.8)
New caregivers (n = 1,000)					
<4	81 (8.3)	88 (8.8)	120 (12)	29 (2.9)	42 (4.2)
5–6	206 (20.6)	268 (26.8)	109 (10.9)	93 (9.3)	140 (14)
7–12	296 (29.6)	493 (49.3)	399 (39.9)	328 (32.8)	360 (36)
>12	316 (31.6)	151 (15.1)	372 (37.2)	550 (55)	458 (45.8)
Expecting caregivers (n = 1,000)					
<4	69 (15)	183 (18.3)	254 (25.4)	80 (8)	80 (8)
5–6	186 (18.6)	261 (26.1)	136 (13.6)	93 (9.3)	93 (9.3)
7–12	382 (38.2)	530 (53)	368 (36.8)	299 (29.9)	299 (29.9)
>12	282 (28.2)	135 (12.5)	242 (24.2)	528 (52.8)	528 (52.8)

overall population expressed willingness to introduce peanut before or around 6 months of age, and nearly 40% reporting willingness to introduce only after 11 months of age, similar to findings noted for tree nut and seafood. In contrast, 60% reported willingness to introduce egg before 8 months of age. The odds of preference for timing of introduction after 6 months of age (vs before 6 months) for any of the foods queried were significantly lower among pregnant caregivers than recently delivered caregivers (peanut: OR, 0.79; 95% CI, 0.65–0.96; $P < .02$, nonsignificant after adjustment for multiple comparisons; egg: OR, 0.67; 95% CI, 0.55–0.80, $P < .001$; tree nut: OR, 0.77; 95% CI, 0.62–0.97, $P = .03$, nonsignificant after adjustment for multiple comparisons; seafood: OR, 0.65; 95% CI, 0.5–0.84; $P = .001$; cow's milk: OR, 0.47; 95% CI, 0.38–0.57; $P < .001$; no interactions with family history noted). However, although only 7.7% were unwilling to introduce at least one of these aforementioned foods before 6 months of age, those who were pregnant had higher odds of being willing to introduce one of these foods before this time than those who had recently delivered (OR, 3.1; 95% CI, 2.1–4.5; $P < .001$). There were no significant associations between the odds of preference for timing of specific, allergenic, solid food introduction after 6 months of age and concern for the child developing food allergy, except for cow's milk (OR, 0.52; 95% CI, 0.38–0.71; $P < .001$, no interactions with family history).

Trends Regarding the Specific Willingness for in-Office Risk Assessment Measures before Introducing Potentially Allergenic Solid Foods

Table 3 details the reported preferences for timing of when caregivers would permit recommended in-office allergy risk assessment (IRA) to facilitate early allergen introduction. Among the combined population, 51% were unwilling to allow skin testing before 11 months of age, and 56.8% were unwilling to allow an oral food challenge (OFC) before 11 months of age. The odds of willingness to undergo an in-office OFC after 6 months of age were lower among pregnant caregivers (OR, 0.67; 95% CI, 0.54–0.82; $P < .001$). Overall, 58% of the combined sample indicated that they would support medicalization of early introduction of potentially allergenic solid foods with IRA (48.3% if have recently delivered, 51.7% if pregnant), with 28.1% indicating they would not support this and 13.6% indicating they would do what their physician recommended. The odds of a preference for early potentially allergenic solid food introduction (variable representing any allergen) to be medicalized were higher among those currently pregnant (OR, 1.28; 95% CI,

1.04–1.56; $P = .02$, no interaction with family history). In terms of support of other specific IRA, those who were pregnant had higher odds of willingness to allow in-office allergy skin testing or blood specific IgE testing (OR, 0.64; 95% CI, 0.53–0.78; $P < .001$ for skin testing; OR, 0.7; 95% CI, 0.58–0.85; $P < .001$ for specific IgE testing; no interaction with family history).

Discussion

Data from multiple countries have indicated that the prevalence of food allergy has increased (or has likely increased) during the past 20 years. In 2000, food allergy prevention advice focused on deliberately delaying introduction of specific allergenic solids (especially peanut, tree nut, and fish) in children considered at high risk for allergy development (those with a first-degree family relative having any atopy) until the age of 3 years given belief that intentional delay would be of benefit to the developing immune system and help prevent allergen sensitization.¹⁰ However, this advice was changed in 2008 to recommendations that there was no protective benefit associated with delayed introduction of solid foods beyond 4 to 6 months of age, without specifically recommending when potentially allergenic food should be introduced, creating a passive policy.^{11,12} Between 2008 and 2017, a total of 7 randomized clinical studies regarding early vs delayed potentially allergenic solid food introduction have been conducted.^{6,7,13–17} At least 2 of these studies specifically investigated children “not at risk” for the development of food allergy, in addition to specifically defined high-risk populations for the development of allergic disease.^{7,14} When these aggregate data were examined in a recent meta-analysis, the combined effect was suggestive that early introduction of peanut and hen's egg were both independently associated with a significant risk reduction (moderate-certainty evidence) against the development of food allergy to these items.¹⁸

Our study assessed the current opinions and preferences of new and expecting caregivers regarding early allergenic solid food introduction and how such introduction may be accomplished by surveying a nationally representative sample of expecting and recently delivered caregivers, unselected for any allergic disease. Although the evidence base may strongly suggest that early allergenic solid introduction is protective of food allergy development, how to accomplish this is entirely dependent on how well accepted such recommendations will be among caregivers.^{19–21} Unfortunately, there are a paucity of data that have investigated precisely what the caregiver preferences for such change in practices may be in the United States.^{22,23}

Our data show a baseline (within 3–4 months of the introduction of these new guidelines) hesitancy toward early introduction of potentially allergenic solids and IRA methods to facilitate such introduction. We noted limited present preference for introduction of potentially allergenic solid foods before 6 months of age, with 40% indicating a preference for introduction much later in the first year (or beyond). Early egg introduction had the greatest level of support among any of the foods queried. Focusing specifically on the current NIAID guidelines, baseline support for EPI before 6 months of age was poor and significantly lower among those who recently delivered vs those currently pregnant—a trend noted for all foods queried. Although medicalization of the early introduction process was supported by some of the overall sample (and the odds of this increased among those currently pregnant), more than half of the population indicated poor support before 11 months of age for specifically recommended procedures to accomplish this (skin testing and OFC), the odds of supporting these procedures were higher in the pregnant sample.

In addition, we captured 3 other potentially critical beliefs that could have significant effect on implementation of the NIAID and

Table 3
Infant Age at Which Parent is Willing to Have In-Office Risk Assessment

Age, mo	No. (%) of parents		
	PST	slgE	OFC
Combined population (n = 2,000)			
<4	354 (17.2)	444 (22.1)	236 (11.7)
5–6	308 (15.4)	279 (14)	244 (12.2)
7–12	471 (23.6)	480 (24)	566 (28.3)
>12	876 (43.8)	797 (39.9)	954 (47.7)
New caregivers (n = 1,000)			
<4	144 (14.4)	186 (18.6)	80 (6.7)
5–6	130 (13)	132 (13.2)	122 (12.2)
7–12	225 (22.5)	231 (23.1)	277 (27.7)
>12	501 (50.1)	451 (45.1)	521 (52.1)
Expecting caregivers (n = 1,000)			
<4	201 (20.1)	258 (25.8)	163 (15.6)
5–6	178 (17.8)	147 (14.7)	122 (12.2)
7–12	246 (24.6)	249 (24.9)	289 (28.9)
>12	375 (37.5)	346 (34.6)	433 (43.3)

Abbreviations: OFC, oral food challenge; PST, prick skin test; slgE, specific IgE.

United States and Canada	United Kingdom	Australia and New Zealand
• Addendum 1: infants with severe eczema, egg allergy, or both should have introduction of age-appropriate peanut-containing food as early as 4 to 6 months of age to reduce the risk of peanut allergy. • Addendum 2: infants with mild to moderate eczema should have introduction of age-appropriate peanut-containing food around 6 months of age, in accordance with family preferences and cultural practices, to reduce the risk of peanut allergy. • Addendum 3: infants without eczema or any food allergy have age-appropriate peanut-containing foods freely introduced in the diet, together with other solid foods, and in accordance with family preferences and cultural practices.	• Exclusive breastfeeding for around the first 6 months of age. • Foods containing peanut and hen's egg need not be differentiated from other complementary foods and should be introduced in an age-appropriate form from around 6 months of age, alongside continued breastfeeding, at a time and in a manner to suit both the family and individual child. • The deliberate exclusion of peanut or hen's egg beyond 6 to 12 months of age may increase the risk of allergy • Once introduced, and where tolerated, these foods should be part of the infant's usual diet to suit both the individual child and family. • Families of infants with a history of early-onset eczema or suspected food allergy may wish to seek medical advice before introducing these foods.	• When your infant is ready, at around 6 months, but not before 4 months, start to introduce a variety of solid foods, starting with iron-rich foods, while continuing breastfeeding. • All infants should be given allergenic solid foods including peanut butter, cooked egg, dairy, and wheat products in the first year of life. This includes infants at high risk of allergy. • Hydrolyzed (partially or extensively) infant formula is not recommended for the prevention of allergic disease. • No specific screening, testing, evaluation recommendation before introduction

Figure 1. Comparison of early peanut introduction guidelines in 4 countries. Comparison of the National Institutes of Allergy and Infectious Diseases addendum recommendations (United States and Canada), the UK Department of Health, and the Australasian Society for Clinical Immunology and Allergy (Australia/New Zealand) recommendations regarding early peanut introduction.

any future guidelines. We noted that some of the population had concern for the child developing food allergy, expressed importance for adhering to early introduction guidelines, and believed that timing of solid introduction was important to potentially prevent food allergy. These are all potential buy-ins for the success of implementing guidelines for early allergen introduction for prevention. Our data suggest that considerable work is needed to facilitate caregiver understanding of the recommendations and their outcomes or that policy adjustments are needed to create something more in line with caregiver preferences. We highlight that there were slightly higher odds of support for early introduction, baseline concerns for developing food allergy, the importance of guideline adherence, and the medicalization of procedures to facilitate this among the group of expecting caregivers compared with current caregivers. These findings may suggest that opinions and preferences between these groups differ, but it is unclear whether opinions may shift after delivery. In the best-case scenario, these trends could represent a glass half-full situation with more receptive expecting caregivers, which could be a boon to successful implementation. Because these guidelines are so new, we lack any longitudinal data to indicate whether opinion shifts.

Within the past year, the United States (NIAID), Australia/New Zealand (Australasian Society for Clinical Immunology and Allergy), and the United Kingdom (UK Department of Health) have all revised their infant feeding recommendations based on the results of these recent studies (Fig 1).^{8,24,25} The United States remains the only country where EPI is recommended with specific IRAs as part of a routine assessment.^{8,24,25} Although it is anticipated that only a small subset of the overall US infant population will meet addendum 1 guideline criteria for recommended peanut specific IgE testing and in-office introduction (eg, severe eczema and/or egg allergy), our data indicate that this may be a significant barrier for some caregivers.^{8,21}

It is further unclear to what degree there may also be desire for allergy referral of infants that do not meet such strict criteria, but the health care professional assessing the infant may still request this, for whatever reason (eg, in infants with lesser severities of eczema, with allergy testing performed in the absence of any true pretest probability for egg allergy that documents egg sensitization, or based on simple parental request for specialist evaluation). There is also concern that the existing infrastructure may not support testing or in-office assessment from a cost or availability standpoint, especially because of barriers in finding practitioners who offer in-office infant OFCs or observed ingestions.^{19,22} A recently published study that used secondary analysis of the LEAP data set suggested that peanut skin testing and eczema severity before introduction in the at-risk infant may have limited utility in terms of predicting overall successful EPI and tolerance, as long as these infants are introduced to peanut early.²⁶

This study has several potential limitations. Foremost, this was a sample gathered by a professional research firm that used an online panel; thus, although nationally representative, it may still have some participation and selection bias. The timing of when this survey was fielded was deliberately close to the release of these guidelines as a baseline, which may have prevented framing of the content and importance of the guidelines by the health care professionals of this sample. The preference patterns of health care professionals were assessed in parallel and will be addressed in a separate publication. It is also possible that we did not ask about all the relevant details and concerns about this issue, and there was some omitted data bias. One unexpected finding was a very high reported rate of family history of allergy. Given that this question was asked nonspecifically and did not deeply probe the nature of the reported condition, it is hard to better gain perspective about whether this could be a somewhat spurious rate. We investigated this as a

stratification for analysis and noted no significant independent association with our main trends reported, and we adjusted for family history in our analyses. Another potential limitation is that the reported lack of enthusiasm for early introduction among the current caregivers could reflect the degree to which this was not a high-risk sample; thus, such attitudes may not be inappropriate given that they would not apply to their infants. With respect to queries regarding early milk introduction, it is possible that there may not have been full comprehension that we considered cow milk formula as introduction and were not only referring to the introduction of whole milk. Statistically, adjustment for multiple comparisons was performed using the Bonferroni correction, which is conservative and has potential risks and benefits in terms of tradeoff in type I vs type II error acceptance. The effect of such adjustment was minimal—a limited number of findings had a *P* values between .05 and .005 (the adjusted level of significance).

This study has multiple strengths, including multiple study authors who were NIAID addendum guideline authors with intimate familiarity of the possible implementation and adherence concerns. The survey was nationally representative and surveyed individuals who will be making decisions regarding early, potentially allergenic, solid introduction within the next 6 to 18 months. Lastly, these data are just a cross-sectional analysis of these trends. We plan to assess this longitudinally to better understand and identify these stakeholder preferences and trends, including assessment if these changes once the caregiver has delivered.

In conclusion, recently delivered and expecting caregivers surveyed in this study expressed considerable hesitancy regarding readiness to introduce peanut (and other potentially allergenic solids) early and hesitancy regarding specific in-office assessments to help mitigate potential risk of such introduction. These baseline opinions and preferences show that there are considerable potential barriers toward implementation of and adherence with the recent NIAID guidelines regarding peanut allergy prevention, as well as any forthcoming recommendations supporting other early allergen introduction. Such barriers include differential baseline concern with the development of food allergy, desire to introduce certain potential allergens before a certain time within the first year, and caregiver willingness to have a child undergo preintroduction in-office risk assessment measures before a certain age. A broader implementation strategy for EPI may be needed.

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