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## American Academy of Pediatrics Clinical Report on the Effects of Early Dietary Interventions on the Development of Atopic Diseases: Updated Advice for Health Care Providers

Editorial:

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Ten years ago, the American Academy of Pediatrics (AAP) issued recommendations that addressed dietary management for the prevention of atopic disease in infants and young children. In light of emerging evidence, the AAP updated their guidelines in 2008, particularly regarding much of the earlier advice pertaining to allergen avoidance in pregnancy, lactation and in early infancy. All health professionals involved in maternal and infant care should therefore be aware of current recommendations regarding the prevention of atopic diseases in infants and young children so as not to impose difficult and possibly deleterious dietary restrictions on mothers and infants unnecessarily.

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It was long believed that an immature gut mucosal barrier in infants would allow large proteins to leach through the barrier where they would be presented to an immature immune system, triggering the development of food allergies. Consequently, delaying the introduction of potential food allergens until the infant's immune system matured was thought to make the development of food allergies less likely. Based in part on this theory, a number of studies were conducted in which investigators manipulated the diets of infants and pregnant and lactating women. The results were felt to validate guidelines, and in some cases governmental "decrees," recommending avoidance of certain highly allergenic foods during pregnancy and lactation, and a significant delay in the introduction of these foods in an infant's diet in an effort to prevent food allergies.

Although originally intended as dietary advice for allergy prevention in high-risk infants, these recommendations slowly became accepted for the prevention of food allergies in all infants, even those without any history of atopy and who were therefore at very low risk of developing of food allergies. Today, many health care providers and public health officials continue to recommend that mothers avoid highly allergenic foods, especially peanuts, during pregnancy and lactation, and delay the introduction of potentially allergenic foods until infants are 1, 2 and even 3 years of age (milk; eggs; nuts, fish and shellfish, respectively).

Yet many, if not most, of the studies upon which these recommendations were built could not control for all of the potential variables that could bias the results. Consequently, the strength of the evidence supporting these recommendations has recently been questioned. Moreover, despite widespread dietary advice for mothers to avoid allergens, the incidence of atopic disease has been steadily increasing in all Western societies. The prevalence of peanut allergy is a prime example, and a recent UK study showed that a government recommendation for peanut avoidance during

pregnancy, lactation and early infancy has not made an impact.<sup>1</sup> Likewise, in a study by Kagan et al.,<sup>2</sup> Montreal-based investigators carried out a survey in which peanut allergy was identified in 1.5% of over 4300 respondents with children in kindergarten through to grade 3. A five-year follow-up study<sup>3</sup> found that the prevalence of peanut allergy in Montreal-based children had not significantly changed, a sign that peanut allergy is not abating, despite widespread exhortations for mothers to avoid eating peanuts themselves during pregnancy and lactation and not to give them to young children.

It may well be that allergy prevention measures have been unsuccessful because dietary advice has been ignored, but it is equally possible that the guidance is incorrect.<sup>4</sup> Newer studies suggest that allergen avoidance in pregnancy, lactation and early infancy does not help prevent the development of food allergy. This is demonstrated very well in a recent publication by du Toit et al. comparing peanut sensitization in the UK and Israel, where peanut consumption during pregnancy, lactation and infancy differs significantly.<sup>5</sup> They found that the rates of sensitization were much lower in Israel, where peanut consumption is much higher. In fact, there is mounting evidence to suggest that the early introduction of these foods into an infant's diet may be beneficial.

### New Awareness

It is tempting to assume that delaying the introduction of certain foods is the standard of care, and therefore those recommendations must not be changed until evidence supports otherwise. But instead, we must see this differently. As stated succinctly in a recent editorial: "It is always of concern when official policy is developed on a background of weak evidence..."<sup>4</sup> In the absence of evidence supporting the delayed introduction of foods, and with studies suggesting that earlier introduction is possibly

**Table 1. Dietary Prevention Recommendations/Comments from Professional Organizations**

Definitions/ interventions	Group/publication		
	AAP 2008 Clinical Report	AAP 2000 recommendations	European recommendations <sup>A</sup>
Risk category: "high risk"	Parent or sibling with allergy	Biparental allergy, or parent plus sibling with allergy	Parent or sibling with allergy
Pregnancy avoidance	Lack of evidence	Possibly peanut	No special diet*
Breast-feed "exclusively" until...	Evidence for 3-4 mo (waiting 4-6 mo tied to introducing solids*)	6 mo	At least 4 mo, prefer 6 mo*
Maternal lactation avoidance of allergens	Some evidence for reduced atopic dermatitis	Peanuts, tree nuts and "consider" egg, milk, fish, and "perhaps other foods"	No special diet*
Prevention formulas	Proven hypoallergenic formulas	Proven hypoallergenic formulas	Proven hypoallergenic formulas
Types of "solids" and complementary foods	Wait 4-6 mo; no evidence that avoidance helps	Wait 6 mo; delay milk (1y), egg (2y), peanuts, nuts, & fish (3y)	Wait 4-6 mo; no evidence that avoidance helps

\*Advice the same as for those not "high risk"

<sup>A</sup> ESPACI/ESPGHAN 1999, ESPGHAN 2008, SP-EAACI 2004 & 2008 (ESPACI=European Society for Pediatric Allergology and Clinical Immunology; ESPGHAN=European Society for Pediatric Gastroenterology, Hepatology and Nutrition; SP-EAACI=Section on Pediatrics, European Academy of Allergology and Clinical Immunology)

Adapted from Sicherer SH, Burks AW. *J Allerg Clin Immunol* 2008;122:29-33.

beneficial, we should, rather, make no recommendations about the introduction of specific foods into an infant's diet.

This new awareness has been incorporated into the more recent 2008 American Academy of Pediatrics (AAP) report.<sup>6</sup> First, as noted in an editorial written by two of the publication's authors, a major difference between the 2008 AAP report and the previous iteration is that the new publication "avoids making recommendations"<sup>7</sup> because of the understanding that our knowledge is constantly changing. The new report is careful to discuss dietary changes in light of the strength of current data. The AAP now also gives advice more in line with current European guidelines (Table 1).

### Early Diet for Infants at Risk

The 2008 AAP report promotes exclusive breast-feeding for at least four months. If supplementation is required during that interval, then a hypoallergenic formula may be substituted.

The report further indicates that in determining what types of formulas can be considered "hypoallergenic," comparative studies have suggested that extensively hydrolyzed formulas may be more effective than partially hydrolyzed formulas for the prevention of atopic disease. In addition, not all extensively hydrolyzed formulas have the same protective benefit. Health care providers should therefore recommend the use of a specific hydrolyzed formula based on good evidence. The role of amino acid-based formulas in allergy prevention has not yet been studied, and so specific suggestions could not be made regarding these types of formulas. Nor is there convincing evidence that the use of soy products has any effect on the development of atopic disease in high-risk infants.<sup>8</sup>

In sharp contrast to the older AAP recommendations, the new recommendations state clearly that there is little evidence supporting delayed introduction of complementary foods beyond 4 months of age, and insufficient evidence that any dietary intervention has any protective effect against atopic disease after the age of 4 to 6 months. This includes delaying the introduction

of foods that are considered to be highly allergenic, including cow's milk, eggs, peanuts, tree nuts and fish.

### Diet During Pregnancy and Lactation

The AAP previously suggested that pregnant women with atopy risk avoid peanuts. Since then, a Cochrane database meta-analysis concluded that antigen avoidance during pregnancy is unlikely to reduce a child's risk of atopic disease and dietary restrictions could adversely affect maternal or fetal nutrition. Similarly, antigen avoidance during lactation does not prevent atopic disease, with the possible exception of atopic eczema.<sup>6</sup>

The 2008 AAP recommendations therefore simply state that there is a "lack of evidence" that maternal dietary restrictions during pregnancy or lactation can prevent atopic disease in infants.

### Summary

The latest AAP report and European guidelines indicate that—other than exclusive breast-feeding for at least four months and supplementation of breast milk with a proven hypoallergenic formula if required—no other dietary restrictions during pregnancy, lactation and infancy appear to have any effect on the development of food allergies in high-risk infants and young children. In the absence of good evidence supporting earlier AAP recommendations, health care providers have an obligation to ensure mothers do not harbour outmoded notions about food allergy prevention which may impose unnecessary dietary restrictions on both themselves and their infants. □

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