

# Introducing solid food

## *Age of introduction and its effect on risk of food allergy and other atopic diseases*

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It is a case that family physicians and allergists alike see time and time again. A new mom wants to prevent her child from having a food allergy or other allergic disease. She asks, "When should I introduce foods? Are there any foods I should avoid if I want to prevent allergy in my baby?" We take a deep breath and begin the conversation.

The prevalence of allergic disease is increasing dramatically in the Western world, leading our focus to shift from treatment to prevention. The hygiene hypothesis has led us down various paths in considering the prevention of atopic disease, from "dirt" with endotoxin exposure to the role of our own gut microflora. As the gut is an organ with a large antigenic load, one could easily conclude that the age of food exposure must play a role in the prevention of or predisposition to allergic disease.

A previous hypothesis was that early introduction of foods could increase the risk of allergic disease owing to immune immaturity and gut permeability in infancy.<sup>1</sup> In 2003, the American Academy of Pediatrics (AAP) released a statement on prevention of food allergy in children, which recommended delaying the introduction of cow's milk until 1 year of age, egg until 2 years of age, and peanut, tree nut, and fish until 3 years of age.<sup>2</sup> This recommendation was based on 2 earlier studies, including one showing an increased risk of atopic disease with introduction of solid foods at 3 versus 6 months of age<sup>3</sup> and another showing a correlation between diversity of diet before age 4 months and risk of eczema.<sup>4</sup> In 2006, the American College of Allergy, Asthma and Immunology followed suit.<sup>5</sup> After reviewing 52 studies, they concluded that early solid food introduction could increase the risk of food allergy and agreed with the AAP recommendations on delayed introduction of certain foods for children at risk. Other studies have supported these recommendations, including one showing a higher risk of eczema in preterm children of parents without atopic disease introduced to solid food before 10 weeks of age (post term).<sup>6</sup>

### Times are changing

A retrospective database review of all children born in 1995 in Manitoba noted no increased risk of food allergy in premature or low-birth-weight children, suggesting

that gastrointestinal tract and immune system immaturity do not increase the risk of food allergy.<sup>7</sup> This study, published in 2007, raised the question of whether it is possible that early introduction of foods might be protective (ie, increase food tolerance and prevent food allergy). In 2008, it was noted that the prevalence of peanut allergy in Israel (where peanut is introduced early and eaten more frequently) was a tenth of the rate in the United Kingdom (where it is introduced later and eaten less frequently).<sup>8</sup> Two years earlier, another study showed that children exposed to cereals before the age of 6 months had a lower prevalence of wheat allergy than children exposed later.<sup>9</sup> Similar studies in 2010 revealed that early introduction of egg (at age 4 to 6 months) was associated with a lower prevalence of egg allergy than later introduction,<sup>10</sup> and that early exposure to cow's milk (within the first 2 weeks of life compared with age 105 to 194 days) was protective against cow's milk allergy.<sup>11</sup> A large prospective birth cohort of more than 2500 infants in the Netherlands was analyzed, and findings showed delayed introduction of foods to be associated with eczema, and atopy at the age of 2.<sup>12</sup>

These studies suggest that early introduction of some foods might actually be protective. And the guidelines have changed. In 2008, the AAP released new guidelines stating there is no current evidence that delaying introduction of solid food (including fish, egg, and peanut) beyond 4 to 6 months is protective against the development of atopic disease.<sup>13</sup> New guidelines released in 2010 by the National Institute of Allergy and Infectious Diseases second that opinion, stating that introduction of solid food need not be delayed beyond 4 to 6 months.<sup>14</sup> However, there are still insufficient data to definitively show that early introduction will prevent allergy.

### Does timing matter?

Confused? So are we. And so are our patients. Practically, it seems that the timing of introduction of certain foods might matter. It is unclear why earlier publications showed delay in introduction of solid food to be preventive. The food, dose, frequency, age of introduction, and heritable background of the child might all play important roles. And we do not yet have all the answers.

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There currently seems to be only one instance in which delayed introduction of solid foods is recommended. For children with older siblings with peanut allergy, there is an almost 7-fold increased risk of peanut allergy in the younger sibling.<sup>15</sup> In that one situation, we suggest the younger sibling should be skin-tested before the parent considers peanut introduction.

Should a child have food allergy, there is ongoing research into “curing” the allergy (or *tolerizing* the child to that food). Current studies are focusing on oral immunotherapy, food peptide vaccines, herbal remedies, and cytokine therapy.<sup>16</sup>

In the clinic, we usually answer mothers’ questions on food introduction with simple advice. Breastfeeding is good early in life because it provides so many benefits to the children (although we cannot advise that it will decrease the risk of allergy). Each child is unique and the evidence is still unclear about when to introduce solid food. As a result, solid-food introduction should be done on an individual basis, in consultation with a physician. 

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**Competing interests**

None declared

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