Recommendations

- An infant at high risk of allergy has at least one first-degree relative (biological parent or sibling) with a diagnosed atopic disease (atopic dermatitis, asthma, allergic rhinitis, food allergy). All other infants are considered at low risk of allergy.
- No special diet during pregnancy is recommended to prevent an allergy in an infant. However, pregnant women should avoid any foods to which they have a diagnosed allergy.
- No special diet during lactation is recommended to prevent an allergy in an infant. However, lactating women should avoid any foods to which they or their infant have a diagnosed allergy.
- For the first four to six months of life, allergy risk may be reduced by exclusive breastfeeding and avoiding exposure to complementary foods, particularly for infants with a high risk of allergy.
- For infants who are at high risk of allergy and are either non-breastfed or are partially breastfed, an extensively hydrolyzed casein formula or a partially hydrolyzed 100% whey formula may reduce the risk of allergy if used during the first six months of life.
- For infants who are at low risk of allergy and are either non-breastfed or are partially breastfed, a standard cow’s milk infant formula with iron is appropriate from birth until nine to twelve months of age, as there is lack of evidence to support use of an extensively hydrolyzed casein formula or partially hydrolyzed 100% whey formula for allergy prevention in these infants.
- After six months of age, if using formula, cow’s milk infant formula with iron can be used for all infants at low or high risk of allergy. Evidence does not support using either extensively hydrolyzed casein or partially hydrolyzed 100% whey formula after six months of age for allergy prevention.
- Soy-based infant formula should not be used in an effort to prevent allergies in infants as there is no strong evidence to support the efficacy of soy formula for this purpose.
- For infants at a high or low risk of allergy, there is a lack of evidence that delaying the introduction of any food beyond six months of age will help to prevent an allergy. Therefore, any complementary food (with the exception of honey) can be introduced to infants around six months of age, as long as the texture is appropriate. This includes commonly allergenic foods such as egg whites, peanuts, wheat, milk products* (cheese and yogurt), tree nuts and seafood.
- Waiting two days between the introductions of new foods is recommended to help identify a specific food that may have caused an allergic reaction.

*Fluid cow or goat’s milk should not be introduced before nine to twelve months of age. See “Should the introduction of cow’s milk and other milks be delayed for allergy prevention?” section below.

Health Benefits

It has been estimated that as many as 6% of young children will develop a food allergy under three years of age.¹ The information provided in this guideline will assist health professionals in providing background information to the public on allergies and allergy prevention in infants. The information provided will also aid health professionals in answering frequently asked questions from clients.
Definitions

**Atopy:** “Atopy is a personal or familial tendency to produce IgE antibodies in response to allergens, and to develop typical symptoms such as asthma, rhinoconjunctivitis or eczema/dermatitis.”

**Food allergy:** A food allergy is an inappropriate or exaggerated reaction of the immune system to foods that, in the majority of people, cause no symptoms. The term ‘allergy’ in its broadest sense is applied to all types of immunologically-mediated hypersensitivity reactions.

**Food intolerance:** Food intolerance is a term “commonly applied to non-immunologically mediated hypersensitivity reactions; an adverse food-induced reaction that does not involve the immune system. Lactose intolerance is an example.”

**High risk of allergy:** An infant at high risk of allergy has at least one first-degree relative (biological parent or sibling) with a diagnosed atopic disease (atopic dermatitis, asthma, allergic rhinitis, food allergy).

**IgE antibody:** A type of immunoglobulin that is elevated in individuals with atopic conditions such as asthma, allergic rhinitis and atopic dermatitis.

**IgE mediated:** “Immunological hypersensitivity due to formation of excessive amounts of immunoglobulin E (IgE) in response to otherwise innocuous antigens (allergens) in the environment or in food.”

**Low risk of allergy:** Children are considered at low risk for developing an allergy if they do not have a first-degree relative (biological parent or sibling) with a diagnosed atopic disease (atopic dermatitis, asthma, allergic rhinitis, food allergy).

Key Questions

**How are food allergies diagnosed?**

It is important to confirm suspected allergies through clinical diagnosis by a physician. Clinical evidence of a food allergy must be obtained through a detailed medical history and physical examination. There are no well-accepted criteria for the diagnosis of a food allergy and therefore, obtaining a clinical diagnosis can be complex. The most common diagnostic tests for food allergy include:

- skin prick testing,
- food-specific IgE determination,
- placebo-controlled food challenge.

Food-specific immunoglobulin G (IgG) tests have become widely available through alternative or complementary health providers, pharmacies and online to consumers. Food-specific IgG tests claim to accurately diagnosis a food allergy; however the use of these tests has been criticized due to lack of evidence. The inaccuracy of IgG testing is a concern as it may identify false food allergies, and result in unnecessary dietary restrictions. Unnecessary dietary restrictions can put an infant or child at risk of nutritional inadequacy. The use of IgG testing to identify a food allergy is not supported by Canadian Society of Allergy and Clinical Immunology (CSACI), American Academy of Allergy, Asthma and Immunology (AAAAAI), or European Academy of Allergy and Clinical Immunology (EAACI).
How common are food allergies in young children?

It has been estimated that as many as 6% of young children will develop a food allergy under three years of age.\(^1\) Statistics on prevalence of food allergy in children vary across studies and are dependent on how the food allergy was diagnosed or reported.\(^7\) Studies that use self-reported food allergy data generally find a higher prevalence of food allergy than those studies that use skin prick testing, placebo-controlled food challenge or IgE determinations.\(^7\)

The most common foods causing allergy in young children are cow’s milk (3.5% self reported; 0.6%-0.9% data from clinical investigation), egg (1.3% self reported; 0.3%-0.9% data from clinical investigation), peanut (0.75% data from clinical investigation), wheat (~0.4%), soy (0.4%), tree nuts (0.2%), fish (0.1%) and shellfish (0.1%).\(^11\) Infants may develop an allergy to other non-commonly allergenic foods, especially if those foods are introduced early (before four to six months of age).\(^12\)

At least 80% of allergies to milk, egg, soy and wheat resolve by school-age.\(^1\) Although peanut, tree nut and seafood allergies are often permanent, 20% of young children with peanut allergy experience resolution by five years of age; recurrence to a peanut allergy is also possible later in life.\(^1\)

What are the symptoms of a food allergy?

A food allergic reaction can be the result of an immunoglobulin-E (IgE)-mediated or a non-IgE mediated mechanism.\(^1\) IgE-mediated reactions are immediate and symptoms generally occur within minutes to two hours after eating.\(^6,13\) Symptoms of IgE-mediated reactions may include vomiting, abdominal pain, diarrhea, skin symptoms (rash or hives), upper and lower airway symptoms (prolonged stuffy or runny nose, asthma) and anaphylaxis.\(^13\) Non-IgE mediated reactions generally produce a delayed localized response, which typically occurs 4-48 hours after eating.\(^6\) Symptoms may include blood in stools, diarrhea, abdominal pain, vomiting and failure to thrive.\(^1,13\)

Does breastfeeding protect against the development of allergies?

Exclusive breastfeeding until four months of age may decrease the incidence and severity of some types of allergic conditions in infants,\(^3,14,15,16\) specifically atopic dermatitis and asthma.\(^3\) However, the evidence is less strong for the prevention of specific food allergies.\(^3\) Evidence also suggests that the preventative effects of breastfeeding may be stronger for infants at high risk of allergy when compared to low risk infants.\(^3,17,18\)

The beneficial effects of breastfeeding extend beyond the potential for allergy prevention and therefore, exclusive breastfeeding is recommended until six months of age.\(^17,19,20,21,22\)
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Healthy Infants and Children
Allergy Prevention
Applicable to: Nurses, Physicians and Other Health Professionals

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Should a pregnant or breastfeeding woman avoid any commonly allergenic foods in her diet to prevent an allergy in her infant?

The available evidence does not support maternal avoidance of commonly allergenic foods (e.g. peanuts, seafood, cow’s milk) during pregnancy or while breastfeeding in an effort to prevent allergy in her infant. Furthermore, unnecessary exclusion of food (e.g. exclusion of the milk products, fish) can put a mother and infant at risk of nutritional inadequacy. It is only necessary for a pregnant or breastfeeding woman to avoid the foods to which they or their infant has a diagnosed allergy.

Food allergens (food proteins) from foods consumed by a breastfeeding woman can pass into her breastmilk; therefore, if a breastfed infant develops symptoms of a food allergy, the suspected food that caused the reaction should be eliminated from the mother and infant’s diet. A physician should then be consulted to determine the potential cause of the reaction and confirm if the infant has a food allergy (see “How are food allergies diagnosed?” section above). Breastfeeding mothers that restrict a whole food group (e.g. Milk and Alternatives, Vegetables and Fruit, Grain Products or Meat and Alternatives) should also see a Registered Dietitian for nutritional counselling.

If feeding infant formula, are there any specific infant formulas that can be used to help prevent allergies?

Breastfeeding offers a variety of benefits to both mother and infant and is recommended. If a mother is unable to breastfeed, chooses not to breastfeed or if she is supplementing her breastmilk with infant formula, there is evidence to suggest that for infants at high risk of allergy, use of an extensively hydrolyzed casein formula (e.g. Nutramigen®, Pregestimil®, Alimentum®) or a partially hydrolyzed 100% whey formula (e.g. Good Start®) may delay or reduce the risk of allergic manifestations such as asthma, atopic dermatitis and cow’s milk protein allergy if used during the first six months of life. More research is needed, however, to determine whether these preventative benefits are observed solely in early childhood, or if prevention extends into late childhood and adolescence. There is no evidence to support use of extensively hydrolyzed casein or partially hydrolyzed 100% whey formula over exclusive breastfeeding for allergy prevention. For infants who are at low risk of allergy and are either non-breastfed or are partially breastfed, a standard cow’s milk infant formula with iron can be used from birth to nine to twelve months of age.

Limited evidence has indicated that extensively hydrolyzed casein formulas may be slightly more effective at reducing allergy risk than partially hydrolyzed 100% whey formulas. More research is needed to conclude how these types of infant formulas compare to each other in terms of allergy prevention. It is therefore recommended that infants who are at high risk of allergy and are either non-breastfed or are partially breastfed receive an extensively hydrolyzed casein formula or a partially hydrolyzed 100% whey formula during the first six months of life. Evidence does not support using either extensively hydrolyzed casein or partially hydrolyzed 100% whey formula after six months of age for allergy prevention. After six months of age, if using formula, a standard cow’s milk infant formula with iron can be used for all infants at low or high risk of allergy. There is no strong evidence for the use of soy-based infant formula for the purpose of allergy prevention.

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Is there a certain order to introduce complementary foods for allergy prevention?

There is no particular order for complementary foods to be introduced for allergy prevention.\textsuperscript{42,43} Complementary foods should be introduced at around six months of age.\textsuperscript{19,42,43} Introducing one new food at a time can make it easier to identify a food allergy.\textsuperscript{42,43} When introducing new foods, parents should be encouraged to watch for the signs and symptoms of an allergy (see “What are the symptoms of a food allergy?” section above). Although there is no consensus on how long to wait in-between introducing new foods, the general guideline is to wait two days.\textsuperscript{42,43}

For more information on the introduction on complementary foods refer to Nutrition Guideline: 4.1 Introduction of Complementary Foods.

Should the introduction of commonly allergenic foods be delayed in infants for allergy prevention?

After four to six months of age, there is insufficient evidence to support a protective effect of any dietary intervention on the development of atopic disease.\textsuperscript{3,5,14,19,23,25} In fact, there is some research which reports that delaying the introduction of allergenic foods after four to six months and up to two to four years, may increase the risk of developing an allergy.\textsuperscript{5,25,44} Therefore, there is no need to delay introduction of any food past six months of age on the basis of allergy prevention, including commonly allergenic foods such as egg whites, peanuts, milk products (cheese and yogurt), tree nuts and seafood.\textsuperscript{3,19,23,37,44,45,46}

Should the introduction of milk products be delayed for allergy prevention?

There is no need to delay introduction of any food beyond six months of age on the basis of allergy prevention.\textsuperscript{3,5,14,19,23,25} Therefore, milk products such as cheese, cottage cheese and yogurt can be introduced in small quantities, at six months of age as long as they are texturally appropriate and the infant is eating a variety of iron rich foods.\textsuperscript{42}

Introduction of fluid whole cow or goat’s milk (3.25% milk fat), however, is not recommended before nine to twelve months of age as it is low in iron and may replace the intake of breastmilk or infant formula.\textsuperscript{19,42,47}

Is goat’s milk a good alternative for infants with a cow’s milk allergy?

Goat’s milk is not a recommended alternative for children with a cow’s milk allergy.\textsuperscript{42,48,49} The protein in cow and goat milk is similar.\textsuperscript{48} Many people who are allergic to cow’s milk protein will also be allergic to goat’s milk protein.\textsuperscript{48,49} Children with a diagnosed cow’s milk allergy should be referred to a registered dietitian for dietary counselling.

Are there any foods that should not be given to an infant who has a diagnosed food allergy?

Infants need to avoid any food(s) for which they have received an allergy diagnosis.\textsuperscript{28} Evidence does not support avoidance of any other foods (any other foods to which infant does not have a diagnosed allergy) on the basis for further allergy prevention.\textsuperscript{3,42} Infants who have been diagnosed with a food allergy should be assessed and follow individual recommendations from their allergist or pediatrician.
Are there any handouts on the allergy prevention for healthy infants and children that I can use with my clients?

For infant nutrition resources visit Nutrition Education Materials at http://www.albertahealthservices.ca/nutrition/Page11115.aspx and click on Infants.

For more resources related to healthy infants and children see Healthy Parents Healthy Children.
References:


24. Kramer MS, Kakuma R. Maternal dietary antigen avoidance during pregnancy or lactation, or both, for preventing or treating atopic disease in the child. Cochrane Database Syst Rev. 2006;(3):CD000133.


