Recommendations

Early identification of food allergies is important to minimize allergen-induced complications. Family, friends, parents and/or caregivers need to be conscious of the following signs and symptoms, to minimize risk of minor and severe symptoms:
- Rash, eczema or hives
- Swelling of the face, lips or tongue
- Nausea and/or vomiting
- Diarrhea
- Abdominal pain
- Wheezing and/or shortness of breath
- Low blood pressure

Once a food allergy has been diagnosed, recommendations for modified or food restricted diets should be continually reassessed by a qualified health professional. If the individual has not been previously assessed by a qualified health professional, such a referral should be made.

The following strategies should be followed to prevent and/or treat an adverse food reaction:
- Early diagnosis and recognition of an adverse food reaction.
- Strict avoidance of one or several foods suspected of provoking symptoms.
- Modify diet to ensure adequate nutrition is provided while avoiding potential allergen(s).
- Recognize symptoms of a food allergy reaction.
- Ensure proper hygiene prior to eating and preparing all foods.
- Always read food labels and ingredient lists on all pre-packaged foods.
- Ensure family members and friends are aware of the food allergy.
- Inform restaurant staff of food allergies when eating out.
- Develop a written food allergy emergency action plan.
- Wear a medical identification bracelet that provides information about the food allergy.
- If required, always carry medication and/or Epinephrine auto-injectors (Epi-Pen®) that can treat the allergic reaction.
- Seek medical treatment following a severe allergic reaction.

Health Benefits

Appropriate nutrition therapy for a food allergy:
- Can ensure proper nutritional intake.
- Can help prevent an adverse reaction and associated health consequence.
- Can provide opportunity to strategize and plan for treatment measure.
- Will promote optimal growth and development in children and adolescents.¹
- Will help create an appropriate management and treatment plan.
Key Questions

**What is a food allergy?**

A food allergy is an abnormal response by the body's immune system to a specific food protein or food additive.\(^1\), \(^2\), \(^3\) The immune system mistakenly identifies a particular food product, usually proteins of large molecular size, as being harmful. Once the body has decided a food is harmful it creates specific antibodies towards it. The most common form of antibodies is immunoglobulin E (IgE) antibodies.

The next time the allergenic food is consumed, the immune system releases massive amounts of pro-inflammatory chemicals in order to protect the body. One of these pro-inflammatory chemicals is called histamine. These chemicals trigger a cascade immunological reaction which ultimately leads to inflammation of the body's tissues and symptoms of allergy.\(^4\)

**What is an IgE Antibody?**

IgE is a specific antibody that attaches to mast cells (a large granular cell, common in connective tissue) in response to the ingestion of a specific food protein or food additive. The IgE antibody is produced according to the specific epitope (amino acid sequence) in the food protein.\(^2\), \(^4\)

When the allergen is ingested, the immune systems recognizes and reacts to a specific sequence of amino acids within the food protein causing the IgE antibodies to be over-produced and attach to the mast cells. Consequently, the mast cells are induced to produce and release pro-inflammatory chemicals in the body.\(^4\)

**What are the most common symptoms of a food induced allergic reaction?**

Symptoms of a food-induced allergic reaction may develop immediately or take up to a few hours to occur after eating the food. Response to a food allergy varies from individual to individual; however, the more serious the allergy the faster the body reacts. Research has shown that individuals with asthma tend to have a more severe reaction to food allergens.\(^5\)

Food allergy reactions can affect any of the 4 following areas of the body, inducing associated symptoms:\(^1\), \(^2\), \(^5\)

1. **Skin**: hives; eczema; itchy lips and/or swelling of the tongue
2. **Gastrointestinal tract**: abdominal pain; vomiting; diarrhea
3. **Respiratory tract**: throat swelling; wheezing; coughing; shortness of breath
4. **Cardiovascular system**: light-headedness; weakness; dizziness
Can an allergic reaction be potentially life threatening?

Yes, the most severe allergic reaction is an anaphylactic reaction. Anaphylaxis occurs when the body's immune system overreacts and involves two or more of the body areas listed above. If not treated immediately, this type of reaction may lead to difficulty breathing; reduced blood pressure, and possibly death caused by respiratory failure. Risk of death is increased in adolescent or young adults, individuals with asthma, allergy to tree nuts, peanuts, crustaceans or fish.

What are the most common food allergies?

Both plant and animal foods are composed of a variety of proteins with different functions; however, only a few of these proteins are considered allergens. Health Canada and the Canadian Food Inspection Agency (CFIA) have identified peanuts, tree nuts (almond, Brazil nuts, cashews, etc.), milk, eggs, fish (including shellfish), wheat and soy as the most common allergenic foods.

Can anyone develop a food allergy?

Yes, any age, gender or race can develop an adverse immune-mediated reaction to foods consumed. Food allergy affects 6 to 8% of children and 3 to 4% of adults worldwide.

The most common food allergies in specific populations include:

<table>
<thead>
<tr>
<th>In a Pediatric Population</th>
<th>Likelihood to persist into adulthood</th>
<th>In Adulthood</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Egg</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Soy</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Wheat</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Peanuts*</td>
<td>Yes</td>
<td>Peanuts</td>
</tr>
<tr>
<td>Tree Nuts*</td>
<td>Yes</td>
<td>Tree Nuts</td>
</tr>
<tr>
<td>Fish (including shellfish)*</td>
<td>Yes</td>
<td>Fish (including shellfish)</td>
</tr>
<tr>
<td>Crustaceans (e.g. shrimp, crab or lobster)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vegetables (e.g. tomato)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fruits (e.g. kiwi, melons, pineapple)</td>
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</tr>
</tbody>
</table>

*Allergies to peanuts, tree nuts and fish are more likely to persist into adulthood. Children who are allergic to eggs, milk, soy and wheat are more likely to outgrow their allergies.

Are there any individuals more susceptible to developing a food allergy?

Yes, a family history of food allergies increases the risk for development of food allergies. In particular, research has shown a child is seven times more likely to develop an allergy to peanuts if their parent and/or sibling are allergic to peanuts.
How is a food allergy diagnosed?

There is no one single test to diagnosis food(s) responsible for an allergy. Diagnosis of food allergy requires extensive documentation and examination. This includes a thorough medical and reaction history, physical examination, food and symptom diary and allergy testing.2

Individuals who suspect they have a food allergy should make an appointment with their physician. The physician will then decide if an allergist needs to be seen. If a referral is made, further tests may be performed to make an accurate diagnosis.

The following allergy tests may be done:

• Skin test: a commercial liquid extract of the potential food allergen is pricked into the skin on the forearm or back. The area is observed for 15 to 20 minutes, watching for raised reddish spots (wheals) to appear. Appearance of wheals indicates a positive result and therefore shows that you may be allergic to that food; however, this type of test has a rate of false-positive results.3 Thus, further tests may be done before a diagnosis is made.

• Radioallergosorbent test (RAST): A blood test that detects food-specific IgE antibodies. A positive RAST identifies sensitization to food proteins.3,6 A clinical threshold point (>95%) is used to determine the likeliness of a potential reaction to a specific protein in food. However, this type of test cannot distinguish between individuals who have intolerance versus allergic reaction to a food.6 Thus, further tests may be done before a diagnosis is made.

• An oral food challenge is the gold standard testing to confirm a food allergy and is often used to validate a positive skin test and/or RAST test results.1,3 This type of test must be conducted by a qualified physician in a controlled environment with emergency medication available to treat food allergy reaction.3

What to do if a food allergy has been diagnosed?

General recommendations:

• Gain knowledge in reading food labels. Know where to look for information about the presence of allergens if unsure.

• Contact manufactures about the potential presence of allergens if unsure.

• Avoid all foods which contain or may contain any sources of potential food allergen.

• Individuals should inform family, friends, schools and restaurants that they have a specific food allergy.

• They should be aware of cross-contamination which can occur during food manufacturing, preparation and packaging. Foods may also come in contact with a food allergen during cooking.

• If an individual is unsure if the food contains an allergen it is best for them to avoid eating the food and talk with their physician and/or allergist.

• It is important to work with a qualified health professional (Registered Dietitian, physician or allergist) to ensure an individual's diet provides all the nutrients they need.

• Individuals should not change their diet without consulting a qualified health professional.

Peanut allergy:9

• Peanuts are a type of legume and not a nut. However, as an extra precaution it would be best to avoid tree nuts and products containing tree nuts until the individual consults a physician and/or allergist.
Other names for peanuts and peanut products include arachide, arachis oil, beer nuts and ground nuts. Individuals should read food labels very carefully and avoid products with these ingredients.

Individuals need to be aware that many nut butters and seeds (sunflower seeds) may be produced on equipment used to process peanuts.

They must be aware that many ethnic foods dishes and/or sauces (Chinese, Indonesian, Thai, and Vietnamese) contain peanuts; therefore, there may be a high potential for cross-contamination.

Although soy and peanuts are both legumes, most often people with a peanut allergy tolerate soy. However, it is best to talk with a qualified health professional before trying products containing soy.

**Tree nut allergy:**

- Nuts of concern include but are not limited too almonds, Brazil nuts, cashews, hazelnuts, macadamia nuts, pecans, pine nuts, pistachio and walnuts.
- Other names for tree nuts and products include anacardium nuts, marzipan, calisson and nut meats. Individuals must read food labels very carefully and avoid products with these ingredients.
- Individuals should be aware that many nut butters, natural flavorings/extracts (almond extract) and nut flavoured coffee/liqueurs (amaretto) may be produced on equipment used to process a variety of nuts/seeds.
- They need to know that many ethnic foods dishes and/or sauces (Chinese, Indonesian, Thai, and Vietnamese) often contain nuts; therefore, there may be a high potential for cross-contamination.
- Although peanuts are a type of legume and not a nut; as an extra precaution it would be best for individuals to avoid peanuts and products containing peanuts until they consult a physician and/or allergist.
- Neither coconut nor nutmegs are tree nuts. Both are seeds that come from a fruit (coconut) or tropical tree (nutmeg). Most often people with a tree nut allergy tolerate coconut and nutmeg; however, it is best to talk with a qualified health professional before trying these products.

**Milk allergy:**

- Other names for milk and milk products include casein/caseinate, whey/whey protein, curd lactalbumin, lactalbumin phosphate, lactoferrin, modified milk ingredients, milk protein. Individuals must read food labels very carefully and avoid products with these ingredients.
- Individuals need to be aware that deli slicers found at any grocery store or butcher have a high potential for cross-contamination as this equipment is frequently used to slice cheese products.
- They need to know that restaurants may add milk, cheese or milk derivates to many of there foods. For example, mashed potatoes may be made with cream, milk and/or butter. Individuals should always inquire with their server before ordering.
- Additional sources of milk include but are not limited too baked goods, cereal, crackers, frozen yogurt, sherbet, coffee whitener, non-dairy creamer, granola bars, soup mixes and tofu.
- Goat's milk has a protein similar to cow's milk. Therefore, as an extra precaution it would be best to avoid goat's milk and any related products containing animal milks until a physician and/or allergist is consulted.
- In recipes, milk can be substituted in equal amounts with water or 100% fruit juice.
- Individuals should talk with a qualified health professional (physician, allergist and/or Registered Dietitian) about other sources of calcium and vitamin D.

Refer to Guideline: Calcium and Vitamin D
Nutrition Guideline
Food Allergies
Applicable to: Nurses, Physicians and Other Health Professionals

Egg allergy:12
- Other names for egg and egg products include albumin/conalbumin, ovoglobulin, ovotransferrin, ovovitellin, meringue. Individuals must read food labels very carefully and avoid products with these ingredients.
- They should be aware that foam and milk topping on many coffees, specialty drinks, desserts and egg substitutes may contain and/or been made from eggs or egg white.
- Individuals should know that many commercially prepared types of pasta either contain eggs or have been processed on equipment that was used for egg-containing pastas.
- Additional sources of eggs include but are not limited too battered/fried foods, creamy salad dressings, mayonnaise, many baked foods/desserts (angel food cake), quiche, soufflé, soups and some alcoholic drinks such as beer.
- Measles, mumps, rubella and flu vaccines may contain eggs. Individuals need to talk with a qualified health professional (physician/allergist) before receiving a vaccine.

In recipes, eggs can be substituted using one of these following:13
- 1 tsp (5 mL) baking powder + 1 Tbsp (15 mL) liquid (water) + 1 Tbsp (15 mL) vinegar
- 1 ½ Tbsp (25 mL) water + 1 ½ tsp (7.5 mL) oil (canola) + 1 tsp (5 mL) baking powder
- 1 tsp (5 mL) yeast dissolved in ¼ (60 mL) cup warm water; let stand for approximately 10 minutes or according to package directions
- 1 Tbsp (15 mL) pureed fruit such as apricots, peaches or bananas

Note – each of these substitutes can be used in recipes that call for 1 to 3 eggs. For recipes with more than 3 eggs it may be trial and error.

Seafood (Fish, Shellfish and Crustacean) allergy:14
- Other names for seafood include anchovy, carp, char, eel, sardine, tilapia, crab, caviar, lobster, shrimp, snails (escargot), squid (calamari), and octopus. Individuals must read food labels very carefully and avoid products with these ingredients.
- Individuals need to be aware that many dips (antipasto), ethnic dishes (fried rice; spring rolls), salad dressing (Caesar), sauces (Worcestershire), hot dogs and wine may contain and/or been made from seafood.
- Individuals need to know that many restaurants often cook with seafood and it is possible cross-contamination could occur from the cooking vapours and/or handling of fish.
- Although an individual may have a seafood allergy (fish or shellfish or crustaceans) he/she may not be allergic to other species within the same group or to the other types of seafood. As an extra precaution it would be best to avoid seafood and products containing seafood until the individual consults a physician and/or allergist.

Wheat allergy:15
- Other names for wheat include bulgur, couscous, durum, enriched white/wheat flour, gluten, wheat bran/germ/starch. Individuals must read food labels very carefully and avoid products with these ingredients.
- They should be aware that many Asian dishes could use wheat flour to flavour meats such as beef, pork or shrimp.16
Individuals should know that some brands of ice cream, hot dogs, pie fillings, puddings, infant formulas, deli meats or cream based soups may contain and/or may be made from white/wheat flour.

Possible sources of wheat include but are not limited to battered/fried foods, soup broth, gravy mixes, pasta, cereals, imitation bacon/crab, modified starches, seasonings and condiments such as ketchup and/or mustard.

It is important to note that diagnosis of a wheat allergy differs from the diagnosis for celiac disease. With celiac disease, an individual has an adverse reaction to the protein gluten. Many grains (barley, oats, rye and wheat) contain gluten and therefore are avoided after diagnosis of celiac disease.

With a wheat allergy, the individual is allergic to wheat protein and may not be allergic to other grains and their derivatives. As an extra precaution it would be best to avoid products containing grains (barley, oats, rye and wheat) until the individual consults a physician and/or allergist.

In recipes, 1 cup (250mL) of wheat flour may be substituted using one of these following alternatives.\textsuperscript{16}

- 1 cup (250 mL) soy flour + \( \frac{1}{4} \) (60mL) cup potato flour
- 64 cup (160 mL) potato flour
- 78 cup (220 mL) rice flour
- 1 cup (250 mL) corn flour

Refer to Guidelines: Gluten-free Diet

Soy allergy:\textsuperscript{17}

- Other names for soy and soy derivatives include miso, mono-diglyceride, soya, soybeans, textured vegetable protein (TVP), and tofu. Individuals need to read food labels very carefully and avoid products with these ingredients.
- They need to be aware that some brands of cooking sprays, vegetable shortening/oil, margarines, chewing gum, frozen desserts, infant formulas, deli meats, peanut butter or mayonnaise may contain and/or been made from soy.
- Other possible sources of soy include but are not limited too baked goods, crackers, cereals, seasoning, soups (canned broths/mixes), thickening agents and imitation meats such as crab, lobster or bacon.
- Individuals with a soy allergy may tolerate soybean oil; however, as an extra precaution it would be best to avoid soybean oil and products containing this oil until they consult a physician and/or allergist.

Refer to Guideline: Label Reading

**How can an individual live with a food related allergy?**

Below are a few tips that can help prevent and/or manage a food related allergy:

- Avoid all foods that will induce an allergic response.
- Education is important; learn to read labels and know how to accurately identify the presence food allergens on the label.
- Recognize symptoms of a food allergy reaction.
- Ensure proper hygiene prior to eating and preparing all foods.
Ensure family members and friends are aware of food allergy.
When eating out inform restaurant staff of the food allergy.
Do not share food.
Work with a health professional (Registered Dietitian/physician) to create an appropriate diet to avoid the allergen containing foods and replace them with foods of equivalent nutritional value.
Ensure emergency measures are in place to reduce the risk of accidental exposure and to respond appropriately in an emergency.
Carry an injectable adrenalin and being familiar with its use in case of accidental exposure and an allergic reaction.
Wear a Medic Alert tag or bracelet in case of loss of consciousness in an allergic reaction.

What is the difference between food allergy and food intolerance?

A non-allergic food hypersensitivity (also called food intolerance) is an adverse reaction to a food but it does not involve the immune system thus is a non-Ige mediated reaction. The reaction severity is dependent on the frequency and quantity of consumption. The most common causes of food intolerances are inadequate digestion and/or absorption which can result in similar side effects as food allergy such as GI intolerances (gas, bloating, and abdominal pain).

Common food intolerances are:

- **Lactose intolerance**: The inability to properly digest milk sugar (lactose) into monosaccharides, glucose and galactose, due to a lactase deficiency. People with lactose intolerance may experience bloating, gas and/or diarrhea after lactose consumption.
- **Celiac Disease**: is a non-Ige mediated intolerance to gluten. Upon ingestion of gluten the body produces auto-antibodies which can travel through the body resulting in inflammation and dysfunction of many different organs. Associated symptoms of gluten intolerance include gas, diarrhea abdominal pain and in severe cases steatorrhea and anemia.
- **Monosodium glutamate intolerance (MSG)**: is a sodium salt of the non-essential amino acid, glutamic acid. Some people with MSG intolerance may experience mild and temporary symptoms such as a headache after consuming foods containing MSG.

Refer to Guidelines: Calcium and Vitamin D; Gluten-free Diet

Are there any handouts on food allergies I can use with my clients?

Refer to approved provincial Alberta Health Services nutrition handouts to support patient education. For more information, contact Nutrition.Resources@albertahealthservices.ca

References


